



AN
INQUIRY
INTO THE
PRESENT STATE
OF
MEDICAL SURGERY;

INCLUDING

The ANALOGY betwixt EXTERNAL and INTERNAL
DISORDERS; and the INSEPARABILITY of these
BRANCHES of the same PROFESSION.

Rationalem quidem puto medicinam esse debere, instrui vero ab
evidentibus causis, obscuris omnibus, non a cogitatione artificis,
sed ab ipsa arte rejectis.

C E L S U S.

V O L. II.

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L O N D O N

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P R E F A C E.

ABSCESSES after breaking, or being opened, and wounds upon discharging ichor or pus, immediately become ulcers; wherefore, we shall now treat of these maladies till they arrive at that state, referring the remainder of the cure to a future volume: there we intend to begin with the most simple ulcer, immediately following a wound, and proceed to those which are accompanied with a bad habit of body, or which by improper treatment, or by length of time, are become chronical; in the hope by this means, to give a distinct view of the subject.

In a work which proposes to point out “ what doctrines ought to be reject-

“ed, and what retained, where improvements are wanted, and in what manner they may properly be made;” preference must sometimes be given to old, and sometimes to new opinions, or both be deservedly overlooked when they do not accord with truth. Such things as are true and commonly known, will be treated so far only as is necessary to keep up a regular chain in the work; my intention being to write for those who stand in need of assistance, a medico-chirurgical directory, *deduced from nature*: well knowing there is not any thing more dangerous than reading, before the mind is capable, from experience, of selecting truth from error. What I recommend to my own sons, I hope will be acceptable to others in the same situation, and having endeavoured to conform strictly to truth, I shall say with Horace

Æquum mihi animum ipse parabo.

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DEFENCE

OF SOME OF THE

DOCTRINES

IN THE

PRECEDING VOLUME.

Vol. II.

B

ADVERTISEMENT.

SINCE the former volume was published, some objections have been made to part of the doctrines advanced, which seem to demand consideration. And though they are urged by writers concealed, yet as it is not the person, but the arguments of an author, that should be attended to, I have examined such of them as require notice, in the hope of ascertaining truth; and I trust it will appear, that I am not stimulated to the following defence by any other motive.

A
D E F E N C E
O F
S U C H D O C T R I N E S
I N T H E
F I R S T V O L U M E,
A S
H A V E B E E N C O N T R O V E R T E D.

PART THE FIRST.

WE have already seen, that inflammation of the skin and membranes, must either disperse, or end in putrid dissolution; because neither of these substances can be converted into pus, nor can serum or lymph take this form, unless extravasated*.

* Chap. iii vol. i.

On the contrary, when the cellular and adipose membranes, are the seat of inflammation, suppuration is a natural consequence; or when serum is extravasated into cavities, &c. its more volatile parts evaporate, or are absorbed, and pus is formed*; unless this fluid is so very corrosive, as to produce putrefaction: and the conclusion formed was, that the different terminations of inflammation, arise from the nature and situation of the offending cause.

But though it is acknowledged, “that
 “these views are recommended by their
 “simplicity,” it is said, “they effectually
 “oppose the observations of the most
 “respectable physicians, and readers will
 “judge, whether the author’s arguments
 “are sufficient, to confute the old systems.
 “Dr. Kirkland will probably allow, that
 “inflammations of the lungs, are rarely

* See Chap. on Purulency.

“confined

“ confined to one part of those organs ;
“ yet there is the most decisive evidence
“ of all the different methods of termi-
“ nation from a peripneumony. A pu-
“ trid dissolution is not indeed so fre-
“ quent, because a supervening hæmor-
“ rhage often prematurely closes the fatal
“ scene. And he will find among re-
“ peated instances of the various termi-
“ nations, in Morgagni's very valuable
“ work, *De causis et sedibus Morborum*, that
“ a looser texture of the lungs is men-
“ tioned, as well as their resembling the
“ liver from an effusion of blood. Our
“ author will find also, various instances
“ of suppuration, and putrid dissolution
“ of the brain, in Le Cat and Deddier ;
“ and he will allow, that inflammations
“ of that part frequently terminate in
“ resolution. Even the erysipelas, the
“ chief support of his reasoning, is *som-*
“ *times* inflammatory. In the same epi-
“ demic,

“demic, and in the adjoining beds of an
 “hospital, it has been sometimes putrid,
 “and sometimes terminating in suppura-
 “tion, apparently from the different
 “habits of the patient, and not from the
 “violence of the complaint*.”

To which we may reply, that our ob-
 servations are drawn from nature instead
 of books; and, for this reason, may not
 perhaps correspond with the doctrines of
 former writers: that though we have
 more than once seen a real abscess of the
 lungs, which came on in consequence of
 a peripneumony, yet if any judgment may
 be formed from practice, and opening
 those who have died of this disease, I be-
 lieve it more commonly terminates by
 resolution, or suffocation; and notwith-
 standing writers talk of suppuration in
 inflammation of the lungs, yet in this
 account, it may be observed, they much
 oftener describe expectoration than abscess.

* Crit. Rev. April 1783.

We

We were also apprised, from the writings of Hippocrates*, Riverius†, &c. as well as from practice in injuries of the skull, by our own dissections, and those of Sir John Pringle‡, and others, that a suppuration, or a putrid dissolution of the brain, sometimes happens; yet none of these circumstances invalidate the doctrine advanced: for I know of no part of the body which may not putrify in consequence of inflammation or acrimony, under particular circumstances; and we will attempt to explain the manner, in which an inflammation of the lungs, or the parts within the skull, may either disperse or suppurate.

The lungs are made up of an infinite number of membranous cells, in innumerable ramifications, of a cartilaginous substance; and covered with a membrane.

* De Morb. lib. sect. 4.

† De Abscess. Cerebri.

‡ Ob. Dis. Army, part iii. chap. 6. n. 4.

When a simple inflammation or an erysipelas happens to such parts, it may terminate by resolution, in the same manner as an inflammation in the membranes covering the liver, and other membranes under the same predicament. When the inflammation is greater, and mucus or lymph, secreted in greater quantity, than it ought to be, it often escapes into the branches of the bronchia, as the inflammation begins to subside, and is discharged by expectoration; sometimes in a crude state, with or without streaks of blood, from the small arteries; and at others, when its more volatile parts are evaporated, in the form of pus, or, what physicians have in this instance all along called, well digested matter, which not unfrequently terminates the disease happily, by the same kind of resolution: as when the juices in a simple inflammation of the skin, or in an erysipelas,

exude

exude upon the surface. But when the inflammation surrounds the extravasated fluids, so that they cannot escape, an abscess may be the consequence*; unless suffocation previously takes place, from extravasated blood, from mortification, or, what I believe more commonly happens, from a great load of yellow lymph, accompanied with a turgency of the blood-vessels.

No one I suppose will contend with me, that the membranes are not sometimes inflamed, without the inflammation extending to the brain itself†; and this inflammation will terminate either by dispersion or putrefaction. But when serous fluids, which possess acrimony, are ob-

* See Morgagni Epist. 20. lib. ii.

† This so frequently happens in injuries of the skull, that it must be known to those, who have seen the practice of surgery; and those who form their judgment from reading, may meet with cases in point, in Lieutaud, Hist. Anat. vol. ii. p. 146.

structed

structed in the brain, in consequence of inflammation, they may readily dissolve this tender substance, in the same manner as they dissolve the fat in the adipose membrane, the parenchymatous part of the liver, &c. and a kind of suppuration will ensue. Nor were these distinctions unobserved, by former physicians. Riverius* after telling us, that the substance of the brain is a seat of abscess, and sphacelus, says *causa illius immediata, est cerebri substantiæ inflammatio. Quæ tamen a phrenitide distinguuntur, ex eo, quod in ea, membrana potissimum inflammantur, & ab iis inflammatio partium tantum exteriori, & contiguae communicatur. In hac vero inflammatio, partes cerebri interiores, ac totum prope modum illius substantiam occupat. Magna autem illa inflammatio in parte mollissima, & bu-*

* Prax. Med. lib. i. cap. 12. de cerebri abscessu & sphacelo.

midissima,

midiffima, brevi sphacelum accersit *. This has since been abundantly confirmed by dissections, and it must be known to every surgeon, that matter is sometimes formed betwixt the dura and pia mater, by inflammatory exudation, as happens in inflammation of the chest.

2d. An erysipelas, is not only *sometimes*, but is *always*, inflammatory. It is a particular name given to one kind of inflammation; wherefore Galen says *Erysipelas tumor est inflammatus, at non semper elatus* †, in which light, in compliance with common sense, and with the opinion of the best writers, it was considered; and we confess ourselves

* The immediate cause is an inflammation of the brain, which nevertheless, is distinguished from a phrenitis, because in a phrenzy, the membranes chiefly are inflamed, and hence the exterior and contiguous part only is affected. In this disease, the inflammation affects almost the whole substance of the brain: but when great in this very soft and moist part, it brings on a sphacelus in a short time.

† Com. in Hippoc. lib. xxx. de offi. cap. 30.

rather at a loss, to conceive how it came to be viewed in any other light! Indeed, Sydenham* mentions a second species of erysipelatoſe fever, but has not Boerhaave† pointed out, that it ought to have had a different appellation? Hoffman‡ refers exanthemata to this claſs; Platner|| who copied Hoffman, ſays *ſi Eryſipelas ſine inflammatione eſt, minus periculum habet*: but whoever ſaw a real eryſipelas without inflammation? Some of the moderns, it is true, have taken into their account, both exanthemata, erythema, gutta roſacea, ſhingles, &c. and by thus adhering to book-ſyſtem, inſtead of nature, they hand down to us confuſion and bad praſtice. Exanthemata and eryſipelas are diſtinct diſorders, and the pow-

* Chap. on Eryſip. Fever, ſecond ſpecies.

† V. S. Com. ſec. 723.

‡ Med. Rat. Syſtem, vol. iv. b. i. ſec. 1. cap. 13.

|| Inſtit. Chirur. p. 75. ſec. 161.

ders they recommend for external application*, were first devised for another disease, and are often injurious when used on the present occasion.

The same epidemic will, no doubt, have different effects upon different habits of body; yet when it happens, that in the adjoining beds in the same hospital, it is sometimes putrid, and sometimes terminates in suppuration, it only follows, that one of the patients has what has hitherto been called a phlegmonoide erysipelas, and the other not: for a true erysipelas never suppurates, unless, as we have elsewhere observed, a dissolution of the skin and membranes into rags may be called so. Nor do I remember any mention being made of the termination of inflammation by the *violence of the complaint*, in the book in question, but from the *nature and situation* of the offending cause;

* See former vol. p. 339.

in which account a little reflection will shew the habit of body of the patient, to be comprehended.

Again: it is feared, that the very general recommendation of sedative applications to erysipelas, may sometimes be injurious, and that I have considered it too frequently as a disease merely local.—But if we understand our own meaning, we are certainly misapprehended; for though the causes, from whence a local erysipelas may arise, are noticed, the uncertainty of even knowing when it is local, though brought on by an external cause, is pointed out; with a caution, if any doubt arises, to treat it as a general complaint. I suppose it will be allowed, that there is such a disease as a local erysipelas, which ought to be treated as such. But in speaking of the use of sedatives in this instance, have not we said, *they are repellents, and should not be applied, unless the disease is slight,*

flight, and we are certain it is local? We certainly paid more attention to critical than to local erysipelata; but I refer to the book * where the reader may judge for himself, and he will discover, that neither the use of bleeding, purging, or cordials, had escaped our notice.

3d. The loose texture of the lungs, or their liver-like appearance, has nothing to do with the subject; for though a celebrated lecturer †, adopted this mode of termination from Morgagni's dissections §, and though it is certain death puts an end to all things, yet we ventured to overlook it, because it is a mere accident, contrary to nature, and not to be imitated, by destroying the patient. Our inquiry was into the manner in which nature herself terminates different kinds of inflammation, that we might follow her steps; and this

* Chap. 6 & 7.

† Cullen, vol. i. sect. 254.

§ Lib. ii. epist. 21. art. 28 & 29.

will be found, never to be by destroying life, when she is capable of effecting her purpose by restoring health. Even in a gangrene, the inflammation is not stopped, but spread by the succeeding mortification, till nature interferes, and stops it by separating the dead and living parts. If this does not happen, it never terminates till death closes the scene. The same may be said of the instance referred to, which no way proves, that the inflammation of the lungs would have subsided in consequence of the extravasation; because in all the dissections, the patient was killed by it, before the inflammation terminated.

The question is, whether in consequence of the extravasation, the inflammation would have subsided if death had not taken place, supposing an irritating cause to exist in the lungs?

To

To which we answer, certainly not. For inflammation does not reside wholly in the blood; and daily experience proves that it cannot be subdued till the affected parts are rendered insensible to irritation, or till the irritating cause is removed. Did ever any one see an effusion of a portion of the entire mass of blood into the cellular membrane, in any other part of the body remove inflammation? I must confess I have not; and had it ever happened, it would surely have been noticed by some of the numerous practical writers on this subject: which induced me to reject, what has been said about this kind of termination of inflammation, as no wise apposite to our inquiry.

It is imagined, our "chief dependence
" is upon Haller's experiments, respecting
" the want of irritability in the arteries,"
which it is said, " have been repeat-
" ed with very different success, by
C " Monro,

“ Monro and de Haen.” It is confessed however, “ that whether the coats of the
“ arteries contract by a muscular power,
“ or their elasticity, cannot at present be
“ determined. But it is alleged, that
“ the experiments we made are incon-
“ clusive, because they are contradicted
“ by Dr. Hales in his *Hæmastatics*; and
“ because if the arteries act by a muscular
“ power, they must contract like hollow
“ muscles, which have no fulcrum, and
“ consequently when their continuity is
“ destroyed, all their action at the divided
“ part will cease. Even Haller, the great
“ supporter of this doctrine, is almost
“ compelled, from the force of evidence,
“ to allow the contractility of arteries,
“ and in his later works, complains of un-
“ fairness in his enemies, who represent
“ him as denying the muscular power of
“ arteries in general, when he spoke only
“ of the smaller ones.”

Now,

Now, we are always willing with eagerness to accord with truth, but we pin our faith upon no man's sleeve; we therefore did not depend altogether upon Haller, in what is said about irritability in the arteries, but upon the facts adduced*, and by drawing out bare arteries with a tenaculum, tying them with thread, and seeing that they have no more feeling than a bone. We oppose Dr. Hales with the more *accurate investigator*, Haller†, who repeatedly asserts, that the arterial blood is not accelerated by the impulse of the heart, while its motion is brisk; and we believe what he says, *because we know it to be true.*

And is not this doctrine abundantly confirmed by the accurate observations of Spallanzani, the Pavian professor, who attributes the motion of the blood to the

* P. 277, vol. i. † 2d. Dissert. on the Motion of the Blood, Exper. 85, and several other places.

heart alone, and allows nothing to the contraction of the vessels, or any other co-operating cause. He says, in the part contiguous to the heart, the motion of the blood was unequal during the time of the diastole ; but this alternate stagnation became gradually less distinct, as the distance from the heart increased, and toward the more remote region of the aorta, totally disappeared. In the arteries of a middle size, such as the pulmonary and mesenteric, the motion of the vital fluid is quite regular and uniform.

The inequality in the motion of the blood in the animals on which Dr. Hales's experiments were made *, was confessedly owing to their violent straining to get loose, &c. and we know this will always happen from the same cause, or when, from loss of blood, there is not

* Stat. Eff. vol. ii. Exper. 1st. & seq.

a sufficient quantity in the vessels to keep a regular stream. The blood in the small collateral arteries too, will sometimes be discharged *per saltum*, agreeing with the contraction of the heart, where it has an angle to pass, and meets with resistance. But when the large arteries are divided, where the action of the heart is vigorous, and the animal quiet, it is discharged in the manner described. Nor can I conceive a juster comparison than that which has already been made, of the engine constructed to extinguish fire.

If it is uncertain whether the coats of the arteries have a muscular power, there is no certainty of this power propping up the old system. It should have been observed, that our experiments were not confined to divided arteries only, but extended to those which were laid bare, without a division; and what is curious enough, instead of motion being destroyed

by division, there was none to be seen in the carotid arteries till a division had taken place, and then their projectile motion was very evident.

As Haller could not observe any contraction in the arteries, upon examining the circulation, and finding them not always closed in dead animals, he hastily concluded, that they were void of contractility; and thus led himself into difficulties: for those who opposed him, shewed that upon dividing an artery, it contracts so as to become impervious. Hence they imagined, the whole of his observations were erroneous, and by thus drawing wrong conclusions, from these premises, the subject became confused. But the truth seems to lie betwixt both opinions. The large arteries, such as the aorta, I believe never do close themselves, from their connection and situation; nevertheless, this system of vessels have a constant tendency

tendency to contract, by an elastic power they possess, as is evident from their adapting themselves, when divided, as the blood diminishes, to the quantity remaining in the vessels* ; and from their closing up in living animals, when the blood ceases to move through them ; as we have several years since proved, in an essay on hæmorrhages from divided arteries. But that they have neither systole nor diastole, during the circulation, is equally evident ; and the very experiments which were brought to confute Haller, tend to confirm his observations. For the contractile power his opponents discovered, being made by a substance resembling elastic ligaments, instead of muscular fibres, it constantly prevents the sides of the arteries from giving way to, or being dilated by, the motion of the blood, except in those instances of which

* See Addenda, vol. i. p. 310.

we have already spoken*. Besides, a muscular fibre contracts only while it is stimulated; of course it will cease to act when the stimulus ceaseth (witness the heart), and were the coats of an artery composed of muscular fibres, they would not act longer than the blood moves through them; but the contrary happens.

We have already shewn the analogy betwixt elastic ligaments and the coats of the arteries, and that they preserve their elasticity after death†; as will evidently appear by taking the aorta of an ox, and stretching it lengthways, the manner in which it naturally moves when living; for it will at once shew that it has exactly similar powers with the elastic ligament in the necks of brutes, whereas the muscles when dead, are incapable of being lengthened or moved by stretching, without

* See Addenda, vol. i. p. 310, 311.
in general, p. 259.

† Inflam.

tearing

tearing to pieces : nor is it possible to put them into any sort of motion, because the sentient principle of the brain, which governs and makes part of a muscular fibre, vanishes with life. But arteries preserve their action after the living principle has left them, because death does not destroy their elastic property till putrefaction takes place. The arteries are kept from closing in a living body, by the motion of the blood, and by their connection with the adjacent parts ; as is evident, from their contracting after being divided, when the motion of the blood through them is suppressed. The latter of these causes prevents their becoming impervious after death, and they now sink, like all other elastic substances in animal bodies, into a state of rest, till put into motion by art. But though we are so firmly persuaded, that there is nothing muscular in the coats of an artery, and that like the bones,

bones, tendons, &c. they are incapable of being irritated in a sound state; yet we know, that, like those substances, they possess nerves, and imagine there is a material difference, in the contractile power of a living and dead artery. But that the coats of an artery and muscular fibres are very distinct, and different substances, is to me sufficiently evident; and I doubt not will be so to others, when viewed in the light we have attempted to give.

There are writers before Haller, who casually mention, that the arteries have neither systole nor diastole; but they were unnoticed. Even his experiments were not rightly understood, either by himself or others; and have not therefore been attended to, in the manner they deserve. The facts however recorded by him perfectly correspond with those we have observed, and are alone fully sufficient to establish

tablish the doctrine advanced. But I refer again to experiment. We must begin *de novo*; old notions will not assist us, and when the subject is handled by men who are not slaves to preconceived opinions, there will be no difficulty in finding out truth; for it is in this instance as clear as the sun at noon-day. The absence of a systole and diastole in the arteries, is one of those facts in nature, which, when once ascertained, will make its own way; and it is idleness to dispute about what we may any day be convinced of, by ocular demonstration, without the least cruelty, in animals destined to slaughter. There is no other way of settling the point, and we shall be justified in concluding, that those who talk upon the subject, without thus informing themselves, are either lazy or fearful of facing truth.

An

An opinion also prevails, "that we oppose Dr. Cullen's theory of inflammation without success; and that we chiefly fail, where we endeavour to prove, that no obstruction exists in inflammation."

But those who please to compare the quotation from Dr. Cullen, p. 247, with what is said p. 254, & seq. in the former volume, will immediately discover whether this opinion is well founded. We are rather surprised that men of sense, who have had time to shake off the fetters of authority, should favour a doctrine founded in conjecture, and raised into system, without one real fact to support it: and though the sentiments of this writer deserve the most respectable attention, because he has thought much, with the power of thinking, yet when he has recourse to imagination we must attend him with caution, because

because this mode of assigning causes, has never yet stood the test of inquiry*.

It must be remembered, that one main point of our intended institution, is that a medico-chirurgical physician, should understand his profession thoroughly. Others are of a different opinion, and we cannot therefore dismiss this article, without entering a caveat against a preference which has been since given to general knowledge; because all general knowledge is allowed by men of the best understanding to be superficial. It is the shadow of knowledge only, being acquired, "by skimming over the surface of science," and fit for no other purpose than deception. Though a physician may be satisfied, "with a general comprehensive knowledge, both of the surgeon and apothecary's art, if he is occasionally instructed

* Witness Boerhaave.

" by

“ by them, in those circumstances, which
 “ are dictated in constant experience, and
 “ more frequent examination;” yet—what
 may be the fate of the poor patient, should
 these assistants prove inadequate to the task
 of instructing their pupil the doctor?

P A R T T H E S E C O N D.

I Wish also to see what I have said about
 the nervous fluid canvassed, because
 the subject seems not yet to be generally
 understood: for it is imagined by another
 writer, “ that no physiologist, has attri-
 “ buted any of the particular functions
 “ of the nerves, to the fluid we meet with
 “ in dissecting the brain;” and it is said,
 “ certainly Boerhaave to whom Dr. K.
 “ refers, did not mean this by the nervous
 “ fluid*.” And yet this said Boerhaave

* Monthly Rev. Nov. 1783.

teaches,

teaches*, "that the juice or spirit of the
" brain and nerves," (which he also calls
" a lymphatic juice, and nervous fluid,)
" always appears within the medullary
" part of the brain in dissections, manifest
" not only to the eye, especially when
" assisted with a microscope, and which
" juice is often found in a much increased
" quantity in most diseased brains, and
" imagines from the parts it passes through,
" that it is the most subtle juice of any in
" the whole body, which being separated
" in the most wonderful fabric of the
" *cortex*, is thence propelled from every
" point, through pervious tubes, into the
" medulla oblongata, and there collect-
" ed."

Again, in his comment on the same
section, he says, "I have frequently ob-
" served, by dividing the medulla oblon-

* Instit. sect. 274 & seq.

" gata,

“ gata, with a very sharp razor, and then
 “ inspecting with a microscope, little drops
 “ of moisture transuding like dew, which
 “ presently exhale and dry up, or if you
 “ wipe or scrape them off, they are pre-
 “ sently again renewed :” whence from
 experiments made by evaporation *, and
 the celerity with which he *supposes* it to
 act upon the nerves and muscles, he con-
 cludes, that its component particles, are the
 most simple, dense, or firm, subtle and
 moveable of any animal juice. That the *tu-
 buli* of the nerves, continually receive this
 juice of the *medulla*, and transmit the same
 by very distinct passages, to every indivi-
 dual part in the whole body ; and that by
 the conveyance of this juice only, they
 perform all the actions and uses of
 nerves.

Surely he labours much in every page,
De spiritu cerebri, et de nervis, to inculcate

* Lor. cit.

this opinion, and expressly says, *Duae opinioniones, nostris temporibus, suffragia hominum patiuntur. Alii nempe, liquidum aliquod per nervos ferri, & sensuum motuumque, causam esse persuasi sunt, quæ nostra est opinio.* He reprobates the other opinion, of the nerves acting by vibration, and maintains, that it is impossible any of their effects should be produced by motion in themselves; “ but the
 “ juice spoken of, is obedient to the
 “ will, for the nervous *tubuli* being full
 “ of it, an impulse communicated to it
 “ at one end of the tube, will thrust out
 “ its globules at the other, in the very
 “ same instant of time. This we know
 “ by placing a row of ivory balls, close to
 “ each other upon a table; for then by
 “ striking upon the outermost ball at
 “ one end, the furthestmost at the other
 “ end will instantly recede or run off
 “ with the velocity first communicated,

D

without

“ without any sensible succession through
 “ the intermediate balls. And if a tube
 “ be full of liquor, you no sooner urge
 “ more in at one end, but it instantly
 “ runs out at the other.” And has not
 Haller too, in his *Physiology*, Lect. VII.
 Sect. 390, told us that the nerves perform
 their office by the motion of their juice?
 From all which it seems to be evident,
 that though Boerhaave *supposed* this juice
 to be a spirit endowed with peculiar pro-
 perties, and talked much to no sort of
 purpose, about its invisible motion; yet
 it is the juice he discovered, in dissecting
 the brain, and the very fluid we describ-
 ed: and we are the more surpris’d at this
 opinion not being generally known, be-
 cause so late a writer as Fordyce* in
 speaking of the different opinions con-
 cerning the manner in which the muscu-
 lar fibres are put into motion, says, “ It

* Elem. Pract. of Phys. on Mobility and Irritability.

has

“ has been conjectured by some, that the
“ motion was communicated by a fluid,
“ flowing through the nerves as tubes.”

This account, I am fearful, will seem tedious, to a reader already acquainted with it, but I was in fact called upon to shew, that I had not made an ungrounded, hasty, assertion *; and though we agreed with Boerhaave, in there being a nervous fluid, because we have often seen it, yet we no way accorded with him in opinion about its use; well knowing it was imaginary, unsupported by facts, and calculated to maintain a speculative theory. It was called a nervous fluid, that it might not be confounded with common lymph, because it is secreted in, and properly belongs to the brain, and because it contains less gross parts, than other lymph; owing perhaps to its passing through finer strainers. But whatever may be its na-

* See p. 133, 1st vol.

ture, it is shewn that it is as immediately necessary to the life of the animal, as blood itself.

It is said indeed, in opposition to the arguments adduced on this head, “that the speedy death following the discharge of this lymphatic serum, in the *spina bifida*, is no proof of its being essentially necessary to life. It rather proceeds, from the admission of air to the spinal marrow; and the same event has always followed all attempts, to draw off the accumulated fluid in the external hydrocephalus, though this fluid has never been supposed different from other dropical collections.”

Now we pay very little regard to supposition, and notwithstanding Tulpius *

† Cap. 29. lib. 3. This probably was the first opinion which presented itself to his mind, and it seems since to have been copied without an opportunity of knowing whether it was true or false.

says,

says, *Tum ob denudatos nervos, per tumorem passim dispersos, quos circumfluus aer, adeo immutaverat, ut non licuerit infanti vitam prorogare, ultra diem tertium;* and Morgagni * in his account of this matter, adopts the same opinion: yet we beg leave to dissent from it, because we believe, there is no instance upon record, which proves that the air, coming to the spinal marrow, ever killed the patient in three days; and because we have known the evacuation of the contents of these tumours, occasion death, without any possibility of the air getting admittance. In particular, I have seen two of them upon the *loins*, in which the almost transparent fluid, was only covered with the pia mater. One of these, was a patient of my friend Mr. Dalby of Kegworth, in which there was neither rupture or opening in the tumour, but a

* Observ. vii.

constant exudation that wet two double cloths in a day, terminated after some time in the death of the infant. The other lived near this place, and a kind of fissure suffered the fluid to escape, but the membrane subsiding, prevented the entrance of the air, and yet the child died in a few days. Does not Ruyfch * tell us, that though the fluid is discharged by pricking with a needle, yet death is speedily the consequence, and could the admission of air in such instances, possibly take place?

Beside, we have several times known the air to have free admission to the spinal marrow, in carious ulcers of the spine, and to the brain in injuries of that substance, without any remarkable effect; because in the former instance, the patients survived a great length of time, and in the latter I have seen them reco-

* Ob. 34.

ver, though the air at each dressing, might get into a considerable portion of a lacerated brain, with the same ease, that it comes in contact with a common fore. And it may be observed, that it is not merely air, but the air of hospitals, &c. which is so injurious in fractures of the skull.

If by external hydrocephalus, is meant the watery tumor upon the head of new born children, it is the same disease, as the tumor accompanying the *bifid spine*. Of course the same event will follow drawing off the accumulated fluid. They take their rise from the brain, or spinal marrow, and are contained within the membranes, that naturally invest the *cerebrum*, *cerebellum*, and *medulla spinalis*. And though Ruysch called it a dropsy in the spinal marrow*, or of the brain, when diseased, and said it was nothing more than

* Loc. cit.

a preternatural expansion of the membranes which cover the medulla spinalis, distended by a great quantity of serous humor †; it surely does not follow, that a dropfy of the brain, or of the spinal marrow, is of the same nature as an hydrocele, ascites, or other dropfical swellings. Mr. Warner ‡ more judiciously observes, that these tumors are to be distinguished from all other, by their rise, situation, the circumstances of their being always born with the subject, who is generally afflicted with a partial palsy, and by their contents which are fluid and commonly transparent. There is no doubt, but a difference ought to be made, betwixt these and other watery tumors; and I am persuaded intirely omitting the distinctions the ancients made in hydrocephali || has been injurious to science, by confounding one disease with another.

† Ob. 36 ‡ Case 17. || Fabricius, cap. VII.
they are collected together in a short compass.

One kind of hydrocephalus, is formed betwixt the cranium and *dura mater*, another betwixt the *dura* and *pia mater*, a third in the ventricles of the brain, a fourth is an hydatid betwixt the ventricles, and the fifth is that of which we have been treating. The two first may be considered in the light of other dropfical swellings, and I apprehend, the cases Morgagni describes, in the ninth article of the twelfth chapter, in his first book, were of this sort; because discharging the water by incision, cured one of the children, the other was relieved for a time, and there are similar instances to be met with upon record.

I have seen a watery tumor of this kind, on the outside of the head which took its rise inwardly.

A youth then eight or ten years of age, had always been an idiot, and the tumor had broken two or three times before I saw

saw him ; but this event happening again while he was under my care, with the rest of the poor of the parish, I saw it arose from water, rather of a muddy colour, making its way out of the scull, betwixt the *sutures* : and though the greatly distended scalp, discharged more than a pint of fluid, and continued to run for a month, or six weeks, it healed up. But a fresh swelling soon began to arise, and in a year's time, became very large, the poor boy seemed to undergo great uneasiness, and it was therefore opened again, with the point of a lancet, and discharged the same kind of fluid with relief. Afterwards in the space of a year or two, it was opened twice more, before death put an end to his sufferings ; but I had not an opportunity of opening the head, not knowing when this event happened.

From the whole, it seems evident, that
those

those who suppose, the fluid contained in the tumor, accompanying the *bifid spine*, to be similar to dropfical swellings, are mistaken; because the evacuation of their contents, is attended with different events, and because the fluid in the external *hydrocephalus*, or collected upon the spine of new-born children, comes immediately from the medullary part of the brain, which never happens in common dropfical swellings.

This fluid is the only one, which enters the substance of the brain, and must be without doubt its proper and only food. Nor do we give up the idea of its being ordained for more purposes than one, * as happens in several instances, in the animal economy, especially in the blood, which feeds the muscles, &c. and occasions the contraction of the heart. But leaving uncertainty, and

* P. 169, Vol. 1st.

considering

considering it in no other light, than the food of the nerves, we cannot avoid still continuing in opinion, that it is essentially necessary to life.

Internal hydrocephali, are foreign to our present subject, and we shall only observe, that it would have been needless to have entered into this discussion, did it not lead to practice in injuries of the brain, which may often preserve the life of the patient. For the nervous fluid discharged from wounds of that substance, I am persuaded, often produces the same effect, as when discharged from the bifid spine, if suffered to continue any length of time; and that suppressing of it, by medicaments, sometimes prevents a fatal termination of the malady by a general palsy, * which happens from the brain, being exhausted sooner or later, in proportion to the violence of the discharge,

* See Injuries of the Brain.

It

It is thought also that I have done wrong, in taking cognizance of the *scarlatina anginosa*, and the gout, and rheumatism, in a book on medical surgery. But those who are in this way of thinking, will please to remember, the mode of education recommended, the qualifications of those who are intended to supervise this business*, and that we had an eye to science, instead of the emolument of individuals. For though medicine may be divided in a trading way, yet as a science no division can take place. And notwithstanding, the various nick names† which have been given to the former of these complaints, it is strictly an erysipelas, arising from contagion. The chapter would have been incomplete without it, nor in my opinion can the disease be viewed in any other

* See Introduction, note p. 72. and 73.

† Erysipelatous sore throat must be excepted.

light,

light, to be understood; for the appellations commonly used to distinguish it, describe some of the symptoms, instead of the disease * itself. Whereas the name we have given, immediately conveys to us the nature, and leads to the cure, of the complaint.

In speaking of the cure of inflammation by discussion, it was impossible to overlook the gout and rheumatism, whether they were within the limits of medical surgery or not; because, it is their natural way of terminating. But Celsus, who is our director in this instance, places all external disorders, though they take their rise inwardly, in that branch of medicine, which depends upon medicaments, or what we have called medical surgery. The lumbar abscess, no sooner shews itself in the groin, or thigh, than it comes within the surgeon's province.

* They are collected together in Fothergill's last Edit.

The same may be said of the liver, &c. which suppurates, and breaks outwardly; and the gout * and rheumatism being attended with external inflammation, and tumor, are certainly within the cognizance of those, whose business it is, to cure external complaints; especially as ulcers are not unfrequent, where chalk stones are formed. I am firmly persuaded, external applications will be of more use in this disease, when properly chosen, than has been imagined. In the rheumatism too they are often of great service, but should the attendant be ignorant of the nature of the disease, he will be equally unknowing in the choice of the remedy.

The nervous rheumatism, is the most exceptionable in the arrangement we have made; but the doctrine being per-

* Parry may be pleaded as a precedent since the Greek division.

fectly

fectly new, I was desirous of taking that opportunity, of offering it to the notice of the faculty, as I shall not have any other so proper for the purpose. Besides, as a medical surgeon may often be consulted about pains in the hips, knees, or wrists, surely he ought to be acquainted with every cause from whence they may proceed. The more we look into these things, the more clearly shall we see, the close connection between external, and internal disorders: and what has been said, it is hoped will be a sufficient apology, for attempting to brush off a little dust that had fallen upon, and tended to obscure what I have already written.

C H A P. I.

ON PHLEGMONE AND ABSCESS.

HAVING treated of those inflammations which naturally terminate by discussion, order requires us next to discourse of those, which end in suppuration. For this purpose we may observe that the Greeks used the word *φλεγμονη* * to signify inflammation in general, but after particular inflammations acquired particular names, it was often employed to distinguish that kind, which they supposed contained more heat or fire, as arising from pure blood, and terminating in suppuration; which was extending it beyond its original meaning. Inflammation and suppuration it is well known are different things, and notwithstanding

Phleg-
mone,
what.

* See Chap. I. V. I.

the perplexity we meet with, in some modern nosologists *, it can be understood in no other sense, than the general before name for inflammation, of any kind, or in any part of the body.

We must also remember, that the Greeks used the word *αποστημα*, *abscessus*, *ab αφισαμαι*, *abscedo* to depart) in medicine, to signify a separation by disease, of the parts of the body, which cohered together. Accordingly Hippocrates says *επι σφακελισμυ αποσσις οσσεσ* †, from a *sphacelus* arises an abscess, or a separation of the bone; and in gatherings behind the ears, where the parts were separated by a collection of matter, he used the same term, which Galen in his chapter on abscesses, clearly explains. He says, “ Abscesses are those

Abscess
what.

* Linnæus must be excepted, though he is wrong in confining it to the external parts.

† Aphor 77 Sect. 7. He must mean where the bone was affected.

“ disor-

“ disorders in which the parts of the
 “ body before cohering, recede from each
 “ other. There must of necessity be a
 “ void space, which will contain either
 “ a moisture or flatus, or a composition
 “ of both §.” In another place, he ob-
 serves, “ An abscess (*five αποστημα*)
 “ so called, is a conflux of blood in the
 “ middle of any vacuity, so long as no
 “ opening or eruption happens, in its
 “ external superficies,” which if we
 change the word blood, to *serum* or *pus*,
 agrees with the modern definition. In-
 deed the Baron Van Swieten, imagined the
 ancient physicians, used the words *apof-
 tasis* and *apostema*, in various senses; be-
 cause Hippocrates employed it, to denote
 the change of one disease into another,
 when he says, *ex aliis febribus & morbis,
 abscessus in quartanas fiebant*: but does

• De art. ad. Glau. lib. ii. cap. vi.

† Com. in Hip. lib. de offici. cap. xxvi.

not he in this instance, adhere to the common meaning ? For the word abscess seems intended to signify a separation, or what we call an intermission in the fit ; and it is very evident, this word had but one signification, when we call to mind, that even astronomers, by *abscessus solis*, meant the sun's declination, or his departure southward.

Besides these, there were several other tumors called abscesses, both by the Greeks * and Latins † such as the *meliceris*, *steatoma*, *atheroma*, &c. because the parts which before naturally cohered together, are separated by an intervening substance ; and we shall hereafter have occasion to take notice of lymphatic and gelatinous abscesses, &c. but the species which at present claims our attention, is the *purulent abscess* : and we apprehend this appellation, characterises the disease in question, without confusion.

* Paulus and others.

† Celsus.

C H A P. II.

O N P U R U L E N C Y.

IT seems to be an incontrovertible axiom, that *serum* is never changed into *pus*, unless it is extravasated *. But to have a clear idea of suppuration, we must begin with viewing the most simple process of this kind, and after all that has been lately said upon the subject, we shall discover, that it is nothing more, than a collection of serum, or mucus, *evaporated* to a certain thickness, as the Baron Van Swieten †, has already taught; and that the admixture of other substances by dissolution, only forms matter of different kinds. Pus, what.

* Chap. 3d. Vol. 1st. † Com. sect. 158, art. 7.

How
formed.

The Baron in speaking of the formation of pus in wounds, justly observes,
 “ That it is not formed within, but out
 “ of the vessels in the cavity of the wound,
 “ from the juices there extravasated, be-
 “ ing digested by the heat of the body.
 “ For if all the matter be cleansed from the
 “ surface of a wound with soft lint, with-
 “ in an hour afterwards, it will appear all
 “ over beset with a thin liquor, instead of
 “ matter; but when the wound has
 “ been covered with a plaister, for four
 “ and twenty hours, upon removing the
 “ dressings plenty of matter appears.”
 Sir John Pringle observes *, “ that the
 “ serum of the human blood, upon stand-
 “ ing but a little time in the furnace, be-
 “ comes turbid, and gradually drops a
 “ sediment resembling well digested mat-
 “ ter;” and therefore concludes, “ That
 “ the serum is continually oozing into

* Ob. p. 383, paper 7.

“ all

“ all ulcers, but from the heat of the
“ the part, and the natural volatility of
“ animal fluids, it is all quickly evapo-
“ rated, excepting this sediment, which
“ remains in the sore in the form of
“ pus.” GABER has made similar ex-
periments, with the same success; but
conclusions drawn from chemical experi-
ments alone, are nowise to be depended
upon, as demonstratives of any process in
the animal œconomy; nor is chemistry
necessary to settle this matter, as practical
observations in surgery, may daily afford
fuller conviction. The matter in the
small pox pustules, that found in the large
natural cavities of the body, and what is
called inflammatory exudation, are full e-
vidence. Every one knows the fluid in
the small pox, is expelled in a limpid
state, and forms pus afterwards, by stag-
nating betwixt the cuticle and skin; and
can there be any doubt, that the large

quantity of matter, so often found in the chest, &c. without any visible ulceration, or breach in the adjacent parts, is owing to the unusual secretion of serum, in consequence of irritation, and to its being converted afterwards into thicker or thinner pus, according to the degree of absorption, or evaporation, that has taken place? Nor have those, who suppose the vessels themselves, from disease, to have a power of changing the lymph they secrete into pus, overturned this opinion, if there is any dependance upon plain simple facts, which daily present themselves in the practice of surgery, supporting the opinion of pus being formed of serum, after it is extravasated.

Some have supposed, that pus of all kinds is produced, or preceded by inflammation; and we know that in those habits, where the heat of the body is below the natural standard, abscesses are
filled

filled with poor thin matter, for want of warmth to thicken it; and that upon their being opened, air getting admittance, and being confined, inflammatory heat comes on, and pus is formed. On the other hand we have often seen tolerable good matter formed in abscesses, without any previous inflammation, fever, or pain, where the degree of heat in the body was about natural; and when inflammation occasions heat and obstruction, beyond a certain degree, the formation of pus is prevented, by converting the stagnating juices, into an ichor. In the ulcer immediately following a wound, good pus is never formed till the inflammation entirely disappears, the new flesh begins to rise, and the part acquires its natural heat. Wherefore, though we allow, that suppuration mostly accompanies, or is subsequent to a certain degree of inflammation, yet as we daily see in recent ulcers,
good

What
heat ne-
cessary.

good matter formed without preternatural heat or inflammation, we think the natural heat of the body, in a good sound constitution, is fully sufficient for the purpose of evaporating the more volatile parts, and giving to matter its proper consistence, notwithstanding it may be thickened quicker, if a somewhat greater heat prevails.

Blood and
flesh not
converted
into pus.

It was long an opinion, that blood and flesh, were converted into pus in wounds; but experiments have taught us, that this opinion is ill founded. Blood stagnating in contused wounds, into which the air gets admittance, becomes a putrid gore. If either blood or flesh, be covered in an healthy ulcer, immediately following a wound, and dissolved in good matter, the matter is changed from purity, and becomes more or less offensive. While a wound is in a crude state, the matter is foetid, because the ends of the fibres dissolve, and render the discharge somewhat

somewhat putrid ; but no sooner is this corrupted flesh cleared away, than simple lymph, by inspissation convinces us in what manner true pus is formed.

But though blood or flesh occasions a degeneracy, when dissolved in good matter, yet fat or oil being dissolved by serum, make very little difference from pus, formed by evaporation ; for the pus in common abscesses, seems to rise in consequence of a secretion by the lateral lymphatics, of serum, being lodged in the cellular membrane, which dissolves the neighbouring fat, and oil, and forms an homogeneous mixture ; unless membranes, &c. happen to undergo a dissolution, and then it degenerates, and occasions that foetid smell, we often perceive upon opening these tumors. If we pass a seton, it occasions a greater secretion of lymph, pus in the same manner is the consequence, and the same

Foetidmatter how found.

may

may be said of contusions, when they end in suppuration. Wherefore there are two kinds of matter, the one by evaporation, the other by mixture: that by evaporation is frequently ropy, or tenacious, especially when made of mucus, unless acrimony interferes; whereas that by mixture, is always destitute of cohesion. * Pus which is white, soft, bland, and

* Physicians have long been endeavouring to discover from the matter spit up by consumptive persons in coughing, whether there is any ulcer in the lungs or not; but the task is very arduous. Matter formed of inspissated serum, or mucus, shews its mildness by tenacity, but it does not follow that there is no ulcer in the lungs, &c. for this kind of matter is formed both in ulcers, and upon surfaces. I have seen many die of a true consumption, who never spit any thing else than inspissated lymph. Matter spit up void of cohesion, is more suspicious, and a breach in the solids is to be suspected, but is not to be depended upon; because this also is sometimes formed, without solution of continuity. The fate of the patient however, does not altogether depend upon the presence or absence of ulcers, but upon the
cause

and inodorous, seems not to possess any degree of acrimony, as the facility with which sores heal under such a discharge, evinces; and whether the matter in mild abscesses is more acrid, may be doubted, because serum itself has a powerful dissolving property, without acrimony, and may alone be capable of producing the dissolution we find in these tumors. But though pure *pus* be very mild, it is certain, though contrary to some late opinions, that the matter both in ulcers and abscesses, is often more or less acrid; as we shall hereafter have occasion to observe, from its effects upon sores, and upon the constitution.

Laudable pus,

cause which occasioned them; for we very well know, that ulcers of the lungs discharging pus, which arise from a vomica following a peripneumony, or from a wound, &c. heal frequently without much trouble; whereas those which are brought on by a sephroplulous taint, always terminate sooner or later in death; because not only the lungs, but the whole body shares in the original disease, and must be changed to perform a cure.

CHAP.

C H A P. III.

ON PURULENT ABSCESSSES.

EVERY inflammation of the cellular membrane, is accompanied with a simple inflammation of the skin, occasioned by the fluid underneath, irritating the nerves which terminate in the superficies of the body, in proportion to the degree of irritability, and the power of the irritating cause; and accumulation of heat, redness, tumor, and pain, are the consequences. According as the cellular membrane, the seat of abscesses, is loaded, and thickened, the skin is elevated more or less, into a conical form, and a pulsation is sometimes felt, from the circulation of the blood through the arteries being interrupted, in part, in its passage

Seat of
abscesses.

Symp-
toms.

passage to the veins : and whenever a simple inflammation of the skin, and thickening of the cellular substance are united, a purulent abscess may be expected to be forming ; because excepting accidents, nothing but matter capable of irritating, could produce both these effects at the same time, as wens, &c. demonstrate.

Plain however, as these marks point out the nature and seat of the disease, writers have directed the same treatment to be pursued in the beginning of this tumor, as in an erysipelas, or a simple inflammation of the skin. But the question is, whether dispersion ought in this case to be attempted or not ? An erysipelas, or a simple inflammation of the skin, we see must either terminate by dispersion, or mortification ; because, the accumulated fluids are not extravasated. There cannot therefore be any doubt, about the method which ought to be pursued

pursued, especially as by imitating nature where a *metastasis* has happened, we finish the work she has begun, by discharging outwardly, offending matter, immediately from the vessels in which it lodged; * and this experience teaches may be safely, and readily done. If nature be left to herself in the instance before us, suppuration for the most part happens; and can an attempt to suppress in general be right, whenever the offending matter is separated from the blood? To disperse the swellings in this instance is to *return* crude matter into the blood; for we are to remember, that being extravasated into, and deposited in the cellular membrane, it cannot, as in a simple inflammation, be discharged by the vessels of the skin; but that absorption must first be promoted, and the noxious humor, again be mixed with the circulating juices, before it can be entirely re-

Critical
absorption
not to be
repelled.

* See Simp. Inflamm of the skin and Erysipelas.

moved

moved. Hence dreadful consequences may arise, and we ought, I think, to reprobate the doctrine which teaches, "That the method of curing every inflammation by resolution, is of all others the best; that the matter of the disease, is so scattered by the *vis vitæ*, and proper remedies, that it becomes very much like the healthy humors, with which it flows through all the vessels, without injury to any of the functions."

All this I firmly believe is nothing more than speculative theory; for though we know that mild good matter in ripe abscesses, will sometimes be absorbed, and pass out of the body, without injury; yet we are equally certain, that morbid crude matter, residing in the cellular substance, in the first stage of an abscess, is exceedingly active, apt, like the syphilis, to rest in the lymphatic system; and though it does not always bring on its

F

effects

effects immediately, yet it will often be productive of ill consequences, notwithstanding the use of purges, diuretics, &c. which not having an elective property, cannot prevent its doing injury. Indeed, there may be particular instances in vital parts, where a large tumor, though seated outwardly, would destroy the patient before it broke; and where death may be the consequence of suppuration, dispersion if possible should take place. Such cases have happened within our notice, which we shall mention among the following observations, intended to illustrate what we have been saying.

Instances. It may be remembered, that we have already mentioned chronic erysipelata being brought on by dispersing crude matter from abscesses: we shall have occasion to notice the inconvenience, of rubbing in mercurial ointment to disperse critical abscesses in the glands; and I very well remember

remember, more than thirty years ago, I was called to a woman in this neighbourhood, who after a fever of two or three days, was seized with a rigor, and afterwards an inflammation in her hand, betwixt the fore finger and thumb, upon which the fever abated. But the pain from the inflammation becoming violent, the assistance of a barber surgeon was desired, and many attempts were made to remove the present symptoms by dispersion. She was bled and purged, a fomentation, and Bole Armoniac with vinegar were applied to the part, and a delirium was the consequence. When I first saw her, the delirium was attended with a tremor, her pulse was exceedingly weak, her urine came away involuntarily, and death that evening took place; seemingly from all power in the nerves being destroyed by the matter which was driven inwardly, falling upon this system.

On the 5th day of April, a nobleman's daughter * six years of age, was seized with a fever, and a pain in her head. On the day following, her neck became stiff and painful, and on the third day, a tumor appeared on the shoulder. On the fourth Dr. Duke was called to her assistance, and although he imagined the tumor to be critical, yet he ordered the patient to be bled, a clyster to be given, discutients to be applied, and treated the fever with its common remedies.

On the seventh day Wiseman was consulted, and every thing being reconsidered, they agreed to repeat the revulsive method, that they might carry off the humor, without the tedious, inconvenient work of suppuration. Nevertheless after two days more, there were symptoms of matter being formed, which in due time was discharged gradually,

* See Wiseman's surgery, Chap. 3d.

through

through an opening made by a caustic, upon the deltoide muscle.

On the third day after opening the tumor, the matter became thinner, with a fœtor resembling a dead body, grumous blood was discharged from the ulcer, a catarrh, and apthæ came on, the patient died on the twenty first day of the disease." And it is not evident, that nature brought forward her own work, in opposition to methods used to prevent her, and that the manifest putrefaction arose, from the absorption of acrid matter into the blood, which was weakened by evacuation?

A gentlewoman after lying-in, was seized with an inflammation in her breast, a pul-tice was applied, and in a few days, there was an evident fluctuation of a small quantity of some kind of matter. The tumor not being in a proper state of maturity for opening, the cataplasm was con-

tinued, but in two days time, absorption had taken place, the inflammation had subsided, and all appearance of suppuration was at an end; upon which she took a few doses of physic, and seemed to be recovering slowly, from her late situation. Nevertheless, in three weeks time, she was seized about noon, with a most violent rigor, which so greatly affected the nervous system, that she almost instantly became delirious, the common offices of nature, were no longer at the command of the will, and though an erysipelatous kind of inflammation, again appeared in the breast, it could not be made to continue, or answer any good purpose, and death prevailed in a few days, in opposition to every attempt to preserve life.

In my reflections upon this, and similar instances, I have been led to suppose, that the crude matter which had been absorbed, fixing itself in the habit, brought
on

on a very irritable state of the nerves, and perhaps otherwise injured them. That the rigor was in consequence brought on by causes elsewhere assigned*, and that the injury thus done to the nervous system, could not be repaired by nature, assisted by art : for, so far as my observation goes, in all fevers, where the nerves appear to be chiefly affected, the fate of the patient depends upon the manner of attack ; because where the rigor is excessive, few only recover, owing perhaps to an extreme degree of irritability of a particular kind, and to the injury such a state of the nerves receive, when affected by any external cause, which greatly lessens their energy ; and that absorbed matter may apparently lie dormant in the habit sometime, and then shew itself as has already been observed.†

Nor are these the only inconveniences,

* See *Inflam.* 1st. Vol.

† *Treat. Erysip.* p. 336—376. 1st. Vol.

of attempting to discuss tumours of this kind; for the process of nature may be stopped, without our being able intirely to remove the disease from the part. It is probably owing to these causes, that inflammation neither disperses nor suppurates kindly, when evacuations, &c. are used; and the cure which takes up much time, might have been soon accomplished, had the officious assistant been out of the way.

A man was suddenly seized with an inflammation, accompanied with a thickening of the cellular membrane in the groin. He was bled and purged repeatedly, put upon low diet, and mercurial ointment was rubbed upon the affected part; but though by this means the inflammation was lessened, and the progress of the tumor retarded, it could not be entirely removed. The surgeon therefore changed his scheme, but suppuration would not come on, under the use
of

of stimulating cataplasms, and at a month's end he was reduced to a very weak state, in consequence of pain, and want of rest.

To restore that strength, which had been so unnecessarily, and unsuccessfully diminished, the bark was taken two or three times a day; wine was ordered with a more generous diet, and opium was given at bed time; by which means assisted by the application of the emplastrum sticticum* the tumor encreased, suppurated, and was cured in a short time.

Another man after being ill two or three days, was seized with a rigor, which was followed by an inflammation on the inside of his thigh, a little above the knee. He was bled, purged, and cooling ointments were applied, which lessened, but did not remove the complaint, and after a tedious expectation, an imper-

* See sticticum forward.

fect kind of suppuration came on, for upon opening the half elevated tumor, the matter was thin, and the cellular substance, but in part dissolved. However all was put to right, by the bark, opium, wine, and a generous diet.

Innumerable instances of the same kind, might be selected, to prove the danger and impropriety of attempting methods, contrary to what nature herself pursues. Medical books abound with observations of suppuration coming on, in opposition to every attempt to suppress it; and there is not any doubt with me, about the injudiciousness of not suffering suppuration to take place, (except under particular circumstances) whenever a metastasis of matter is seated in the cellular membrane, lying immediately under the skin, especially as a loss of part of these substances, is no ways injurious to the patient.

Indeed, the impropriety of repelling
critical

critical inflammations, or tumors thus brought on, has been spoken of ever since the days of Hippocrates; and many cautions have been urged against such practice. But what has been said about it has not been set in a light, sufficient to deter practitioners, from treating most kinds of inflammation in the same manner; for seeing critical inflammations daily disperse with safety, they have first tried this method *, owing to their not making a proper distinction, betwixt the seat of the cause of one inflammation and another. And we have too commonly gone on discussing, till nature has stared us in the face, and shewed the impropriety of our proceedings. But we hope the arrangement made, will set this matter in its true light, and prevent future mistakes.

Critical abscesses are said to be occa-

* See inflam. chap. 2d. p. 316.

fioned

Metastasis
what and
how
made.

sioned by a metastasis, (*transmutatio*) by which we understand, a separation of morbid serum from the blood by secretion; for where acrimony prevails in the juices, we apprehend it will pass along with the lymph, till it stagnates or meets with obstruction: this happened in the young man's groin, mentioned in the introduction *, where bile being mixed with the circulating juices, occasioned an ulcer by stagnating in the cicatrix. If acrid matter happens to stagnate in the cellular membrane, it will by irritating invite a flux of offending humors to the part, and form an abscess. If it does not stagnate in the cellular membrane, it will be taken up by the lymphatics, and be carried into the lymphatic glands, in the same manner as the variolous matter is carried in inoculation, and produce a glandular abscess. We have observed

* P. 112.

that

that a fit of the gout, may be occasioned by the lymph in this disposition, being incapable of passing through compact ligaments; and it is worth considering, whether every deposit of matter, as it has been called, is determined by nature to a particular part, or whether it happens accidentally in the manner described; because, if this observation is a step nearer to truth, it follows that an abscess is critical only*, by the flux that is invited into the part, and by the subsequent discharge; and may not upon these principles, caustics in particular instances supply the place of blisters with advantage? and we may gain more benefit in fevers from artificial drains, than has hitherto been obtained.

But leaving this subject to the reflection of cool ingenuous men, after repeating that an inflammation of the skin ac-

* See abscess of the glands.

companied

Suppuration the work of nature.

Art by what means useful.

Emollient cataplasms when necessary

accompanied with a thickening of the cellular membrane is the criterion which distinguishes the coming on of a purulent abscess; we must proceed to observe that suppuration is entirely the work of nature, as is evident from its often coming forward under all sorts of applications; and that art can only do service, by regulating the inflammation and the action of the nerves, which may be greater or less than they ought to be. If the inflammation be too great, it retards suppuration, by preventing a regular secretion, and rendering the stagnating fluids ichorous; and if there should not be a sufficient degree of heat in the part, the progress of the tumor towards maturity will be very slow, so that a medium ought to be observed in such cases.

For this purpose, the practice of applying emollient pultices, where the inflammation proceeds regularly, seems preferable

preferable to all other methods; because they lie easy, adapt themselves properly to the tumor, lessen irritability, and pain, by taking off tension; and by relaxing the skin, they make way for the accumulating matter, and thus determine it to a particular point. Nor is it very material what kind of emollient pultice is chosen, provided they be properly boiled; as they all produce the same effect. The old doctrine, which introduced mucous substances into these applications, to promote concoction and maturation, by stopping up the pores; was founded on false theory, as is evident from the use of gum plaisters, which promote perspiration, and suppuration both at the same time: and though white lilly, or marsh-mallow roots, linseed, &c. being added to cataplasms makes them perfectly emollient, and less liable to become dry, yet it is now agreed on all hands, that under

For the predicament mentioned, the white bread pultice will keep the inflammation within due bounds, and do all that is required from such kind of assistance, if applied twice a day. Oftener is not necessary for the heat it absorbs from the inflamed part, keeps it sufficiently warm.

More
cooling
remedies
when to
be ap-
plied.

However when the inflammation is too great, other remedies are required to lessen it. The ancient practice of adding the juice of cooling herbs to cataplasms, will often answer this purpose. The cerate of Galen is a great cooler, and even cloth wet in cold water may be applied constantly till the heat abates, without danger of repelling the matter. But I have joined a small portion of the vinegar of lead, to the common bread pultice, in which ointment of elder supplies the place of hogs-lard, with all the advantages I could desire; which I suppose was owing to its diminishing the irritability of the part,
and

and thereby preventing in some degree, the afflux of heat and humours, that would otherwise have happened.

But whether we have recourse to simply emollient, or cooling remedies, they should be confined to the part where the matter is most likely to present itself; and to the parts round about, Diachylon spread the thickness of half a crown, or some other mild defensative, should be applied, otherwise suppuration may be more diffusive than is necessary. For though pus in an abscess, cannot spread itself along the cellular membrane, in the same manner as extravasated blood, or water, when its fibres and laminæ, are rendered impermeable by surrounding inflammation, and hardened into a kind of cyst, round the matter formed; yet corrosive matter will spread itself more than it would have done, by relaxing parts which were inflamed, and which the method

Manner
of apply-
ing a pul-
tice to
produce a
cone in
the tumor

advised mostly prevents. The matter I observe, is by this method kept in less room, a large cone is formed, and the rupture in the tumor is much larger, than when this precaution is not taken; probably, from resistance to its pressure being removed only in a particular part, because matter in abscesses, it is well known, always tends to the place where it meets with the least resistance.

Bleeding.

Bleeding has also been recommended to promote suppuration, where the inflammation has been too great, under a plethoric state; and by lessening heat, and abating the impulse of the blood, it may do service in such constitutions. Therefore, if along with great tumor, and inflammation, a quick pulse is accompanied with fulness, a moderate quantity of blood may be taken away. But a quickness alone may be disregarded, as it only indicates the irritability of the habit, and will

will disappear when the inflammation abates. Nor should our steps be guided wholly by the present symptoms, unless they are very urgent. We should look forward, and be upon our guard, against events that may prove troublesome, or dangerous in the progress of the cure. Whenever there is a likelihood of matter being absorbed, thinning the blood, emptying the vessels, and reducing the strength of the patient, will occasion its being taken up in larger quantity, and its having more violent effects. This happened we have seen in the nobleman's daughter. There are multiplicity of similar instances to be met with in writers, where death seems to have been brought on in the same manner: and it behoves us to be very circumspect in the use of the lancet, under such circumstances. In reviewing my practice, I call to mind very few instances, in which I have had occasion to

bleed, to promote suppuration. Saline draughts, cooling purges, whose effects were chiefly confined to the bowels, and a cooling diet have mostly answered my purpose, where the heat of the part required moderating.

Heat
when ne-
cessary,
to pro-
mote sup-
puration.

On the other hand, when the progress of the tumor is slow, and it is destitute of that heat, which usually accompanies a regular suppuration, warming topics should be employed. The pultices in which there are raw or roasted onions, Burgundy pitch, &c. are recommended on this occasion, but these irritate, and tend to bring a greater flux upon the skin than is necessary, without assisting nature in a proper manner, being incapable of invigorating the nerves. I therefore prefer those remedies that quickly promote suppuration by warming the nerves, and increasing their energy without irritating. Nor can it be unnoticed by those who have

have attended to this matter, that the gums, ammoniacum, galbanum, sagapenum, bdellium, opopanax and myrrh, properly managed, will accomplish these effects. Besides, where the state of the nerves requires an increase of warmth, it is certain that in many instances they give ease, and bring on suppuration at the same time*.

But to answer these ends effectually, several of them should be joined together, for though when a simple remedy, of known efficacy is to be used, we cannot be too careful in preventing chemical alteration, yet it must be remembered, that simplifying compound medicaments, often divests them of their power; as the different effects of the sticticum of Paracelsus, and of the common gum plaister, sufficiently evince: the one being a raw composition, with inferior properties, the

What kind of remedies to be chosen for this purpose.

* See inflamed glands.

other rich and powerful, as we shall have several occasions to observe. When different ingredients are mixed together, whether according to the rules of the chemist or not, by acting upon each other *, it is well known they form a new medicine, and may then be viewed in the light of a simple remedy, with a greater number of constituent parts, which frequently, I am persuaded, increase the power of the whole. A number of well chosen cordials united, are more rich and powerful, than when few component parts are employed, (wine excepted). The *tinctura sacra* of the last, was a more efficacious remedy, than that of the present dispensatory ; and several bitters being put together, are said by a modern physician to be more powerful than when few are selected. In like manner, a number

* See Macquer on the affinities between bodies, Theo. of Chemistry, chap. 2d.

of different gums meliorate each other, and become capable of producing effects which none of them could produce if used alone. Nor do I know any plaister where animating applications are required, equal to that mentioned, both on account of its consistence, its coming off without sticking, its giving a generous warmth, and invigorating the nerves. It is true it is an *operose* composition*, and devised with whimsical intentions, but we are to view it in its mixed form, and judge of it by its effects, as has been done in learning the use of all other remedies, whose operations are known. Nevertheless, composition should be regulated by judgment; for by jumbling a number of ingredients together, instead of increasing their power, we sometimes destroy the whole, especially where chemi-

* I have tried to make it less complex but always spoiled it.

cals are taken in, witness the *pill. æthiop.* which I never saw have any effect.

The different effects of irritating and animating applications.

Cheselden says * the *Emplastrum ex Euphorbio* is a most excellent *suppurative*, and better than that of Paracelsus, both in its consistence and use; but the *sticticum*, and this plaister produce different effects, one by irritating, the other by regulating the actions of the nerves †. This distinction has not been sufficiently attended to in practice, for irritating substances by inviting a flux, often occasions a greater extent of tumor, than would have happened, had nature been left to herself, or the *sticticum* applied; which being compounded of sedative and stimulating ingredients, is sufficiently active, without irritating the parts with which it comes in contact: for in the numerous instances in which I have used it, I do not

* Ledran's Operat. p. 467.

† This will be proved in speaking of inflamed glands.

remember

remember ever seeing it fret the skin, except once when it was new made.

The honey pultice made by boiling*, warms without sensibly irritating in general, and will answer every intention where more heat than common is wanting. The *cataplasma maturans* of the London dispensatory is in the same class, or the *emplastrum sticticum* softened with oil of St. John's wort, and made into a pultice with linseed flour will not be less effectual. But whenever time is required to finish the work, the plaister alone is preferable, because it is attended with equal advantage, less expence, and less trouble, both to the patient and his attendant. I have never tried dry cupping in this instance, because the method recommended has always answered my purpose.

* If a pultice is made by rubbing honey, oatmeal, and lard together, it is an escharotic; but being boiled it produces different effects.

Fomentations to be used under restrictions.

Hot fomentations have been indiscriminately advised, to promote maturation in abscesses; but as they are liable to do great injury, they should be used under proper restrictions. Where the fluids are capable of being absorbed, they undoubtedly promote absorption, and are therefore improper when we mean to promote suppuration. And surely those who advise the use of cataplasms, and fomentations together, in common inflammatory gatherings, recommend opposite intentions to be carried on at the same time. It is supposed indeed, by increasing the heat in abscesses, we promote a fermentation, which is necessary for the production of pus. But the doctrine of fermentation in abscesses, is nothing more than an unsupported conjecture. We see pus is commonly formed without it; and where the tumor has a regular tendency to suppurate, it is well known

known fomentations are absolutely unnecessary; for under an emollient cataplasm the disease terminates in its own way, without interruption, and those who employ them in this instance do more than ought to be done.

Nevertheless in cold indolent abscesses I have seen hot fomentations do service.

The upper part of the outside of a girl's thigh, about fifteen years of age, was very much enlarged without being inflamed, and the cellular membrane felt greatly thickened. Various remedies had been long tried by the family, without any effect; but upon ordering a fomentation of wormwood, *Centaury*, *Crude Sal Ammoniac*, &c. twice a day, and applying the sticticum between whiles, the stagnating juices were apparently attenuated, and being confined, suppuration soon ensued. I have several times seen the same effect under similar circumstances, and
doubt

doubt not but it has been seen by others; yet when the fluctuation becomes evident, the fomentation must be laid aside, otherwise it will promote absorption of part of the matter, and protract the disease.

Internal
remedies.

Internal medicines also, are often of great service in forwarding the suppuration of abscesses, where vigor is wanting, but none more than the bark; for it seldom fails, where nature can be assisted, of enabling her to bring the swelling to ripeness, except in what are called scrophulous tumors, where I think it produces no sort of effect. Opium, if pain makes it necessary, will be found serviceable; wine, ale, and nourishing food will assist much in bringing the disease to a crisis.

Symptoms of
matter being
formed.

In inactive abscesses, attended with little or no pain, fluctuation is the first symptom of matter being formed; but in inflammatory gatherings, a remission of inward pain, (though the inflamed
and

and tense skin remains painful) generally leads us to conclude, that a dissolution of the distracted nerves has taken place, that suppuration is commenced, and where it goes on regularly, we should in general pursue the surgical axiom, of waiting with patience, till the abscess is ready to open of itself, or rather till it breaks: for though it be true, that matter is always ripe, yet the tumor is not ripe till all the hardness is dissolved; and when this is effected, the cure is sooner accomplished, and with more ease, than when it is discharged by a premature opening. Good *pus* is a most gentle dissolvent, and commonly, if we except pain from distension, does its work without great violence; and when the tumor is suffered to break of its own accord, (instead of a hasty evacuation, which occasions a deliquum, or often weakness, from stimulus being suddenly removed,

the

Abscess
when ripe,

and when
it is
ed on
the

the matter runs off gradually, the skin subsides, and though we are forced to dilate the opening, we have milder appearances, than when this part of the work is taken out of nature's hand: we therefore recommend leaving as much to her as possible, without being remiss in removing impediments to the cure.

And when
in general
to be
opened.

Indeed when pain from the distension of the skin is exquisite, it may induce us to puncture the tumor with a lancet, a few hours sooner than it would break naturally; and as nature has so nearly finished this part of her work, we may procure immediate ease to the patient, without hazard of interrupting the cure. But we can see no reason for the common practice, of opening every abscess as soon as the skin becomes thin, and the fluctuation of matter very sensible; because daily experience evinces, that nature will accomplish the remainder
where

where no impediment is in the way, in the same manner as she brought the tumor to perfection. Nor should we be hastened in our proceedings, from apprehending that matter being longer confined, may corrode the arteries, veins, tendons, or bones; as this I believe never happens, where it can get to a part which makes less resistance, unless instead of *pus*, an exceeding corrosive ichor destroys all the parts it touches. I have never, that I can remember, met with such accidents, though I have several times known the large arteries surrounded with matter a considerable time. Surgeons cannot be ignorant how powerfully membranes, such as the fascialata of the thigh, resist matter, and the same may be said of tendons when not primarily concerned. When we met with foul bone in abscesses, I believe the disorder mostly originates at the bone, or in its membranes;

Mem-
branes,
tendons,
&c. resist
matter.

membranes ; but this I am certain of, that in general, we run more hazard of injuring the bone by opening tumors before the matter is completely formed, by admitting air, to occasion acrimony that would not otherwise have happened : and truly the opening every maturated tumor, as the books direct, seems to be as absurd, as the application of the forceps would be in every natural labor, as soon as the head of the child comes within their reach. Should it not be from necessity in both cases when we have recourse to art, and yet how seldom is matter in abscesses suffered to make its own way out?

All must agree with Dr. Hunter* "that
 "when once an abscess is formed, in proportion as the matter is collected, it
 "must enlarge the cavity of the abscess ;
 "and this enlargement will be most on

* Lond. Inq. 2d Vol. p. 57.

that

“ that side where the resistance is least.
“ Hence matter gradually makes its way
“ to the surface of the body, be it ever
“ so deeply seated.—When it lies near the
“ surface of the body, and is covered by
“ skin only, and cellular membrane, it
“ points and bursts directly outwards,
“ but when it is deep, and covered with
“ more resisting parts, such as an *aponeu-*
“ *rosis*, &c. it runs under them, and as
“ soon as it has got from this confine-
“ ment, it pushes to the skin, and opens
“ perhaps after a winding passage, at a
“ considerable distance, from the origin-
“ al seat of the distemper; when in
“ large quantity, it commonly by its
“ weight tends towards the lower part
“ of the body, and thus procures for it-
“ self a depending drain, and hence the
“ advantage of leaving such tumors to
“ point or open of themselves.”

To these general rules however, there

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are

Acrel's
method of
treating
abscesses
consider-
ed.

are some exceptions, which we shall take notice of in their proper place ; and shall now observe, that Mr. Acrel has written a memoir, which tends to prove that in ripe critical abscesses, the matter should not be discharged through an opening in the tumor, but by the bowels. * He founds his practice on having observed in the camp hospitals, that fevers among the soldiers terminated frequently by critical abscesses, in different parts of the body. That the patients found themselves best when the tumor was ripe, and fit to be opened, but upon opening them, they relapsed, the symptoms returned, and most of them died within eight days after. Whereas a *thousand*, in whom the matter was absorbed when come to maturity, and carried off by stool, recovered. Wherefore, in future

* See an abstract of this paper in Mr. Dease's Intro. to the Theory and Practice of Surgery, p. 96.

he

he suffered the gatherings to come to a head, and then immediately purged the patient, who became stronger, the pus decreased, the swelling gradually disappeared, and far the greatest number got well : but the reason this practice has not been pursued, seems to be, that the opening of abscesses in general is not so injurious as this memoir represents.

Nevertheless, for reasons we shall assign in the next chapter, his practice may probably be followed in internal abscesses, such as those arising from the pleurisy, hepatitis, upon the psoas muscle, &c. with advantage ; there being a material difference, betwixt the effects of crude, and ripe matter being absorbed. One we have already spoken of, but ripe good matter passes off with great readiness, both by urine and stool, without mixing with the juices in the circulation, or seizing upon any of the parts through which

Abforp-
tion when
it may be
promoted,
and how.

it passes; as its appearance in these evacuations when taken up from wounds and abscesses, continually evinces. But whenever we propose to pursue this plan, brisk purging must not only be employed, but hot fomentations be also used; for these, by promoting the circulation in the small vessels, accelerate this process: nor are vomits to be neglected, especially in weak habits; as they promote absorption without debilitating so much as when purging medicines are used. Diuretics too, on the intermediate days, will assist by irritating the nerves, and the patient's strength must be kept up by tonic medicines, cordials, and a nourishing diet; for without a proper degree of strength being preserved in the absorbents, they probably would be incapable of performing their office. Yet I would not have it understood that I imagine absorption can at all times be promoted

moted by these means ; as I know the prescriber's intentions do not succeed in every instance.

But though mild matter passes off, when absorbed, without doing injury ; yet when matter possesses a degree of acrimony, or is in so great a quantity as to overload the habit, an ill state of health is often the consequence.

What kind of matter does injury when absorbed.

A swelling appeared on the shoulder of a girl about fifteen years of age, on the decline of the confluent small pox ; but being attended with very little pain, or inflammation, it was overlooked by the family who were poor people. Riding accidentally by the house, I was desired to see her, and found an uninflamed bag, containing in appearance nearly a quart of matter, which I intended to have let off gradually the next day ; but the apprehensions of undergoing an operation, worked so powerfully upon her nerves,

Instance.

that the absorbent system was put into motion, and coming to her for the purpose of opening the tumor, I was surprised to find, three parts of the matter drank up and gone, and the remainder went in a few days. A hectic fever, and abscesses which were opened in different parts of the body, succeeded, but the viscera escaping, she recovered after a tedious illness, in which she took bark, antiseptic diuretics, &c. and milk was the food on which she principally lived. All this has been verified ever since the days of Hippocrates; who observed, that when critical abscesses subsided without a succeeding fever, and the matter passed off freely by urine, or stool, or both, the patient recovered: whereas if a fever came on, death was generally the consequence, unless the matter was translated to some other part of the body,

Discharging the matter, however, from
external

external abscesses by urine and stool, will seldom I imagine be practised, unless nature herself directs this method, and she must then be watched; for if a disagreeable hectic appears, the tumor, if possible, should be laid open, so that no matter can lodge, and be the source of mischief. The bowels should be occasionally opened, and other internal medicines capable of correcting, and carrying off the matter which has been absorbed, such as sweet spirit of vitriol, spirit of nitre, or spirit of salt, should be given in agrimony or chamomile tea; and should a greater discharge by the bowels than is necessary attend, starch in small cinnamon-water may be added, to correct the irritating matter, and defend the nerves of the first passages. When one drop of laudanum is joined to each dose (probably by lessening the irritability,) it more powerfully keeps the diarrhoea within bounds,

When nature herself pursues this process what to be done.

and therefore may be occasionally given, when starch alone proves insufficient for the purpose, which will not very frequently happen. But these accidents are most commonly prevented, if the matter from the ulcer has a free discharge.

We have before us, at present, moderate sized abscesses, seated in the cellular membrane, which it is known commonly terminate well, after making an incision in a straight direction, to lay the tumor open from one end to the other, when the matter fluctuates, and is very perceptible under a thin skin: but our enquiry leads us to examine, whether a gentler method of curing by the first intention, by an immediate union of the parts which were separated, may not sometimes be pursued with superior advantages.

Cure by
intention.

If the directions we have given, about their being brought to a head, be observed, a conical bag will often be formed,
the

the opening will be sufficiently, large in a depending part, to lay the abscess dry, and every end we could wish be frequently obtained, without the inconveniences that commonly, more or less, depend on the methods generally used in opening these tumors. Besides, the matter being suffered to drain off gradually, the skin subsides, prevents the admission of external air into the cavity, and afterwards unites with the parts underneath. And I am certain, abscesses by this simple treatment will oftener get well than has been imagined, if the separated parts are not prevented from uniting, by improper dressings. A mild digestive balsam, upon a soft pledget of lint, should be put gently into the mouth of the ulcer, so as not to impede the discharge, and the treatment hereafter recommended in this chapter be pursued; for if relaxing pultices are too long continued, a flux of matter

ter may be brought on, that will frustrate our intentions.

Dilata-
tion when
to be
made.

However, if after waiting a proper time, the opening should be found insufficient to drain off all the matter which ought to come away, and the parts do not unite; a constant secretion from irritation, fresh collection of matter and sinusses, with disagreeable, or perhaps dangerous symptoms from absorption, may ensue, and the practice of extending the opening the whole length of the tumor, or as much as is necessary, by cutting upon a director, must then be followed. I prefer one made of wood, to any kind of metal; because, instead of making dilatation by pushing the knife forward, we do it by the usual and more easy method, of drawing it through the parts we mean to divide; for if soft wood be chosen, the point of the knife, or lancet, which ever is used, being fixed in it, gives
a steady-

a steadiness to the operation. I chuse a lancet fixed in a handle, because, being thinner, it cuts with considerable less pain than the knife, and is less terrible to the mind of the patient. The director should be introduced as gently as possible, that the skin which has subsided may not be disturbed. Nor should the subsequent dressings be crammed into the incision, to distend the lips of the sore. It is sufficient if the matter has a free exit, and dressings which just keep the lips asunder, will commonly accomplish this purpose; and a cure, by the union of the skin with the parts underneath, will sooner happen, and with more ease to the patient, than when a contrary method is taken, provided the muscles are kept in a relaxed state.

In very large abscesses, though the matter extends itself no farther than the cellular membrane immediately under the

the skin, it is to no purpose to wait for a cure, without making a longitudinal incision, sufficient to prevent matter lodging. I have seen the largest abscesses, that could possibly happen to the external parts of the body, cured by this method, with the utmost facility; the skin on each side the incision being restored to its proper place, by the assistance of bolsters and bandage. If it is necessary to make more openings than one, (for an opening in one direction only, may not, from the situation of the matter, be able to execute fully our designs,) a man's own judgment must direct him in what manner to proceed; but if openings are made in such a manner that no matter can lodge, they always answer the end. Le Dran* and others after him, have advised an oval piece of the skin to be taken away, when matter is diffused under the *membrana*

* Chir. Operations,

adiposa,

adiposa, or skin; because, he says, a simple incision would have a loose lip on each side, which turning inwards would make the dressings painful, and hinder the digestions from being easily applied to every part of the ulcer. But, except paring away skin, which is become so very thin, and so much worn out, that it cannot possibly unite, I have never seen it necessary to pursue this method; and I think it should be avoided as much as possible, because it occasions a loss of substance, that must be repaired with difficulty and length of time.

It is in deep-seated abscesses where the skin is much thickened, that counter openings become necessary, where in making dilatations the finger is the best conductor to the knife, because we feel what we have to cut through, what we are doing, and where from the vicinity of large blood-vessels, nerves, tendons, &c.

an

an edged instrument should not come ; when such an opening is made, the lips cannot give too free an exit to the discharge. They should therefore be kept asunder by the dressings, which should be applied with gentleness to the bottom of the ulcer, that it may fill up regularly without leaving a sinus behind.

Cautics. Notwithstanding much has been said in praise of caustics in opening abscesses, and though they are still commonly employed, I rarely find them necessary ; and think the reasons to be met with against them are in general well founded. To which we may add, that they also affect the skin a considerable way beyond the eschar, occasion an ill condition in the lips of the ulcer, and a backwardness in the healing of the sore. They seldom do more than nature may be invited to do, by a much more gentle operation : were they applied in such a manner as to make
a large

a large opening, the disadvantages attending a loss of substance would be the consequence * ; and could any thing but timidity, or false reasoning, have introduced the practice of applying them, on a supposition that they are necessary to assist nature in destroying the skin? It is surely a cruel chemical device, without affording any particular advantages, that cannot in general be obtained with less pain, either by nature, or art, though opium is employed at the same time to mitigate their violence. With more appearance of reason, some employ them in critical abscesses before they are ripe, to destroy the parts impregnated with the humour separated from the blood, and to prevent its return into the habit. But this can only be necessary when nature is remiss, and they should then, if used, be

See Ulcer.

made

made to penetrate deeper than the skin, that they may act upon the cellular membrane.

Seton, its
advan-
tages.

Those who prefer the seton for discharging matter from purulent abscesses, to all other methods, say, "the pernicious influence of the air upon newly opened abscesses is often really astonishing. It first occasions a total change in the nature of the matter, from perhaps a very laudable pus to a thin ill-digested sanies; and afterwards brings on a quickness of the pulse, debilitating sweats, and other symptoms of hectic fever, which in a short time generally ends in the patient's death, or in the production of a phthisis, which at last terminates so. And that though a great number of patients, remained for a very considerable time with large abscesses fully formed, without having any one symptom of hectic whatever,

yet

“ Yet an instance was never observed to
“ happen, of their being opened by a
“ large incision, without almost every
“ symptom of hectic taking place; and
“ that generally in less than forty-eight
“ hours from the time of their being laid
“ open. Whereas, the method of dis-
“ charging the contents of tumors by
“ the introduction of a cord, is attended
“ with every advantage of that by in-
“ cision. It moreover, empties the swell-
“ ings of whatever size they may be, not
“ suddenly, but very gradually. It ef-
“ fectually prevents a free admission of
“ air. It is not commonly attended with
“ near so much pain and inflammation;
“ nor is the cicatrix occasioned by it, e-
“ ver inconvenient or unseemly, which
“ it frequently is after a large incision.
“ The patients treated in this manner all
“ did well, and the cure was common-
“ ly obtained in little more than half
I “ the

“ the time generally found necessary
 “ when a large incision has been had re-
 “ course to.” Which observations per-
 fectly corresponded with those made by
 Mr. Acrell.

Per con-
 tra.

On the contrary, Mr. Bellost, says *,
 “ as for abscesses of all sorts, which
 “ have come under our hands in this
 “ hospital, and have been cured with
 “ an expedition that may appear in-
 “ credible, I will only say this; that
 “ judging it sufficient to make a large
 “ opening in them, I left the rest to the
 “ sage conduct of nature, not forgetting
 “ general remedies, and the ordering of
 “ diet. But as for the dressing of the ul-
 “ cer, I only used a simple pledget cover-
 “ ed with the most common medicines,
 “ and sometimes in case of a cavity,
 “ small compresses for expelling the hu-
 “ mour with a plaister and a bandage

* Hosp. Surgeon, part i. chap. 10.

“ suffi-

“ sufficient to keep it on. The great
“ number of those who have been treated
“ in this hospital, according to this me-
“ thod, and cured in a very small time,
“ is beyond belief.

“ When the orifice is not stopped up
“ with an extraneous body, it is evident
“ the matter can make no stay in the
“ parts, but will come away without inter-
“ mission ; and the parts that were thereby
“ kept at some distance from one another
“ come together, and at the same time
“ do expel whatever may be there con-
“ tained, and leave no empty space for
“ the collection or abode of what is
“ useless or inconvenient. Hence parts
“ are united, nature acts at her freedom,
“ whose balsam generates flesh better
“ than all the remedies in pharmacy.”

Practice
which
ought to
be omit-
ted.

“ I hope I may presume, that none will
“ think I have continued in the use of
“ this method for so long a time, had I

“ not experienced its desirable effects on
 “ a thousand occasions ; and I could safe-
 “ ly take my oath, that never the least
 “ accident happened to any of those
 “ who were dressed after this manner,
 “ Every one may believe as he thinks
 “ good of what I say, but I dare aver,
 “ that I am much more careful that
 “ what I say should be true, than that it
 “ should be persuasive.”

The ef-
 fects of
 air in ab-
 scesses,
 &c. confi-
 dered.

Hippocrates said * “ cold is sharp and
 “ biting to ulcers, hardens the skin, oc-
 “ casions pain without suppuration, li-
 “ vidness, feverish rigors, spasms, and
 “ tetanus.” On this aphorism Galen †
 wrote a comment, which was enforced by
 the Greeks, and copied by the subsequent
 writers to our own times ; and hence a
 general rule was laid down, that the air
 is injurious to ulcers, and wounds. No

* Aphor. 20. sect. 5.
 lib. iv. cap. 1.

† De Simp. Med. Facul.

one among them cultivated this opinion with greater vigor than Bellost *, supposing that, “ by a sharp and clammy acidity, it corrodes the flesh, and utterly spoils the temper of the parts, by wasting the spirits that preserve the *radical moisture*.” But Mr. Sharpe † was of a different opinion, for speaking of abscesses after they are opened, he says “ I do not think the air has that ill effect on sores as is generally conceived; nor would the large abscesses on beasts, which are often exposed to the air the whole time of cure, do well if it was so very pernicious as is represented. But as it tends to the making a scab, and in winter is a little painful to the new flesh, it will be right to finish the dressing as quick as may be without hurrying.”

Which sentiment Mr. Freke ‡ attacks

* Hosp. Sur. part i. chap. 10.

† Introd. Treat.

on Surg. p. 27.

‡ Art of Healing, p. 124.

by saying, (to give a greater proof of the air influencing the external parts of the body,) "Let any surgeon open a cold tumor which was caused by congestion; it shall, on its discharging a little curds and whey, appear to have no signs of inflammation for a few days. But he must have had but little business, or have been a slight observer, who knows not that not only inflammations, but very dangerous fevers, usually follow the opening of these cold tumors, which are kept quiet generally, till they are exposed to the air." But notwithstanding this contrariety of sentiments, I believe, excepting Mr. Bellost's *theory*, they are all right, under different circumstances, and the reconciling them is of importance in the practice of Surgery.

In open
sores.

I perfectly agree with Hippocrates, that cold air gives pain to sensible sores, which
often

often continues several hours. In brute animals we daily see it harden the wounded parts, suppress suppuration, and form a crust which soon prevents its influence. We shall hereafter have occasion to observe, that a stream of cold air upon ulcers has brought on a gangrene. By irritating it no doubt, sometimes brings on rigor, and we have already noticed its effect in the *tetanus*. But these are all accidental, and depend upon the air being very cold, or the sore very irritable; because we constantly see large open sores, in which the air produces none of these effects.

The effects attributed to it after opening abscesses, are of a different nature, those of rendering the matter more active and virulent; and this we know sometimes happens. It must be observed however, that Mr. Acrell's and Mr. Bellost's observations were chiefly made in hospi-

In newly
opened
abscesses.

tals, in which it is well known, the air has a more pernicious influence than where it is not tainted with putrid effluvia ; as the fatal termination of compound fractures, fractured skulls, &c. so frequently evince in such situations, owing not altogether to matter in the fore being changed, but in a great measure to the whole body being previously diseased, from breathing polluted air, and which may account in part for the unfavourable manner in which their operations terminated. But seeing Mr. Bellost's and Mr. Sharpe's observations were made in a similar situation, there must be some other cause for the differences they have remarked. This I apprehend Mr. Bellost has pointed out in his reflections on the mode of practice above transcribed ; for, as far as I can judge, it is chiefly when external air gets admittance into, and is confined in the cavity of ulcers, that it is prejudicial

cial, by changing good matter to bad : for being incapable of getting at liberty, it becomes by the heat of the part more active, and more pernicious, as we shall have several opportunities of shewing. Otherwise if external air had always the same injurious effects upon matter, could surgeons have ever agreed in opinion, that good pus is the best balsam in sores ; for what ulcer is there to which the air has not free access at the time of dressing ?

By what means it becomes pernicious to them.

It is those abscesses where incisions being not made sufficient for laying them dry, or when after proper dilatations the matter is confined in the fore by improper dressings, that are accompanied with an hectic ; but by giving free liberty to air, as well as to matter to escape, we commonly remove the very symptoms large openings are said to bring on. I know of no practice, the good effects of which I can speak of with more certainty. We

And how to be avoided.

by

Setons not
free from
inconve-
nience.

by this method take away the cause of the fever; and notwithstanding the late objections (from not making proper distinctions) to this mode of proceeding, I apprehend it will still, if possible, be pursued, wherever matter lodges in hollow ulcers. Even where the matter is acrid from a bad habit of body, if we take the necessary steps to prevent absorption, by the application of sponge, or by correcting its virulence with topical applications, it seldom does any harm, though a considerable surface should be bare. Nor is the seton free from the inconveniences said to be brought on by incisions; for the air sometimes gets admittance along the cord, and being confined renders mild pus acrid, and brings on inflammation and its consequences. I have tried it in lymphatic abscesses, in hope of having milder symptoms, too often

often without success *; but was happy in putting an end to the unfavourable symptoms, by dividing the skin from one opening to the other. Besides, when an abscess occupies the greatest part of the back, &c. as I have repeatedly seen, it is impossible for one seton, unless of the size of a cable, to discharge the matter properly. Several in such cases must apparently be employed, if we mean to succeed, and a large incision or incisions under such circumstances, will I apprehend sometimes be found necessary.

On the other hand, I have used setons in moderate sized abscesses, which had not the appearance of breaking in the manner I could wish, with success; but the cure was never, as I remember, accelerated by this process. When the tumor breaks in a superior part, a depending orifice may be conveniently made by pass-

When
useful.

* See abscesses about the joints.

ing

ing a seton through it. In sinuous ulcers following deep seated abscesses, where we cannot use the knife, on account of dividing muscles, ligaments, or blood-vessels, it will often in time bring about a cure without violence, if care be taken that the lower opening is larger than the thickness of the cord.

A man had a large abscess, formed under the flexor muscles of the fore-arm, and pointed both at the elbow and wrist. It was opened at both places, but bolsters, bandage, &c. could not effect a cure, and a seton was therefore passed, which in time had the desired effect. Troublesome abscesses, which formed under the *gastrocnemii* muscles, have been readily cured when this assistant was introduced; and I have several times employed a small seton in the sinuous ulcer, which follows the abscesses, that passed from the hand under the annular

nular ligament to the wrist, with a desirable event. Its consequence were equally fortunate in a boy, where an abscess had formed under the the *vastus externus* in the upper part of his thigh, and pointed in the groin near the head of the *sartorius*; from whence a strong iron-eyed probe, with a blunt point, could be passed to the outside; and by cutting upon it, a cord was drawn through. Nor is it necessary to mention similar instances, as they will point out the method which ought to be taken, when they present themselves to our notice. In the abscess which opens the protid duct, all agree its use is indispensable. In abscesses of the neck, face, and breast, which are exposed, setons should be employed; because it is true, that they make a less scar than the lancet or knife. Indeed, it appears to me that each of these methods sometimes deserve preference, and I have advantageously used them

them both at the same time, in the manner of Le Dran, in very large abscesses, where a longitudinal incision could not remove lateral collections of matter. But by whatever method the matter is discharged, relaxing dressings should be laid aside as soon as the inflammation begins to disappear; for these invite a flux to the part, and instead of a union with the substance underneath, fordid ulcers, from the stagnating lymph becoming acrid, are the consequence.

Pultices
when to
be laid
aside.

And in
what
manner
their
place
should be
supplied.

The skin, &c. therefore, which has been relaxed for the purpose of giving way to the matter, should now be gradually strengthened. The diachylon ointment may supply the place of the pultice round the ulcer, to the ulcer itself; if the matter is good, dry lint, but if acrid, mild balsam should be applied, bolsters and bandage should take place by degrees, and, when the sensibility of the
part

part will permit them; dry dressings, or cloths wet in cold water, will finish the cure sooner, and better, than those which have a softening property. Strengthening internal medicines will also sometimes be necessary; but of these we shall be more explicit in the essay on ulcers, and treat in the next chapter, on those abscesses which are exceptions to the general rules laid down, or which require particular management; after taking notice of the nervous cough, which not uncommonly accompanies the forming of matter in any part of the body, to prevent our being led into a wrong method of treating the patient when troubled with this symptom.

Now every cough arises from nervous Cough. affection, and may be said to be nervous; but that we now allude to, proceeds from a disease in the nerves, independent of any flux, or obstruction in the lungs; and the

the slightest irritation from the common air, from the natural mucus or lymph, or the most trivial cause, excites a fit of coughing. We have already observed *, that local inflammation, is always accompanied with an increased degree of irritability throughout the whole body; which, where the patient is strong and healthful, is of the inflammatory kind, and brings on for a time an inflammatory fever, in a greater or less degree. We also observed †, that increased irritability from wounds and ulcers, subjects the patient to evening rigors and fever; and where the forming of matter is slow, in debilitated habits, a different kind of irritability, and the cough we are speaking of is the consequence ‡: owing to the nerves of the lungs being rendered more

* Vol. i. p. 297.

† On Symp. of the nerves.

‡ This doctrine accounts for the cough attending the worms, diseases of the liver, viscera, &c.

irritable,

irritable, in general with the rest of the body *. We formerly took notice, where this symptom came on, from an abscess in the hand and wrist†. I have several times known a fit of coughing instantly brought on, when the nervous system was preternaturally irritable, by irritating the nerves in the ear with an ear picker; fairly confirming the doctrine before taught, that by affecting any one part of the brain, we affect the whole.

A young man was emaciated, and had a violent dry cough for a long time, during the forming of an abscess about the rectum; and the cause not being known, he was supposed to be in a pulmonary consumption, and treated accordingly. But upon the abscess shewing itself, and the tension being taken off, by discharging the matter, there was an end of this symptom which had given him much

* Vol. i. p. 175.

† Ib. 177.

trouble. I have frequently observed these coughs in abscesses about the joints, but upon the cause being removed, they disappeared.

A young woman had a white swelling in the knee, attended with foul bone and abscesses. She was greatly emaciated, had a violent cough, and spit up matter ; which at that time gave us reason to apprehend the lungs were affected, and deterred us from any thoughts of amputation. Nevertheless, the pain which this unfortunate girl bore, obliged her to seek after this remedy to procure ease ; and at her earnest request, I performed the operation without any other prospect. Yet contrary to all expectations, the cough very soon left her, and she recovered ; which hints may lead us to be very accurate in distinguishing one kind of cough from another, that we may not omit the assistance the art affords.

When

When a cough comes on upon the gathering taking place, the cause will often be obvious, if not accompanied with any other apparent disease; but in scrophulous joints attended with swelling in the glands of the neck, we must have an eye to tubercles in the lungs, and the symptoms which usually attend them. A true nervous cough is frequently short and quick, though sometimes fierce and violent, or in weak habits, deep and hollow. At one time dry and others moist; for in irritations of the lungs, there is often a greater secretion of mucus or lymph than usual, and these being inspissated, resemble matter spit up in consumptions: but what we have already said on this subject will lead us to distinguish different kinds of matter, and be some guide to us in our proceedings.

It is impossible to subdue the symptom we are speaking of, till the irritability of

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the

The ef-
fects of
small
doses of
opium.

the habit is removed by discharging the matter, &c. from the abscess; but it may be mitigated by very small doses of laudanum or paregoric elixir; for though twenty of the former may be necessary to procure sleep, yet one drop will allay the irritability of the whole habit, if repeated every three or four hours, by deadening the sensation of the nerves sufficiently, without offending the stomach. It may be given in oil and syrup, or in the Saline Julep, if heat makes it necessary. But when heat is absent, a decoction of myrrh is a more powerful assistant; the bowels being kept regularly open at the same time, and care taken to avoid, if possible, the breathing of air replete with effluvia that may irritate the lungs.

C H A P. IV.

ON ABSCESSSES REQUIRING PARTICULAR TREATMENT.

THOUGH we are in general advocates for tumor coming to maturity, before the matter is discharged, we know the necessity there is of sometimes opening abscesses before they are perfectly ripe; and of these we shall now treat in proper order.

If matter be mild, it seldom makes its way through membranes, and when formed under the aponeurosis of the temporal muscle, it sometimes descends, by passing through the parts which make less resistance into the mouth, and the cure becomes troublesome; but by cutting freely through the membrane when the fluctuation is sufficiently evident, we hasten the recovery, and avoid much inconveni-

Abscess
under the
aponeuro-
sis of the
temporal
muscle.

ence. I have several times known these abscesses, when formed on the upper part of the muscle, discharge themselves on the side of the face. I have had several in this situation brought to me, where sinuses and foul bone were the consequence; but by laying the cavity open the whole length, and dressing the ulcer as particular circumstances required, a cure followed.

Fistula
lachry-
malis.

Every abscess in the corner of the eye has been called, very improperly, a *fistula lachrymalis*; and much mischief, I am persuaded, has in many instances been done by syringing and probing, to remove an imaginary obstruction, when the cause of the disease has not been in the nasal duct. But Mr. Pott has so thoroughly discussed this matter, that he has left very little for others to say upon the subject; and I shall only relate a few observations I have made on the disease, and what methods

methods have best succeeded in my practice.

It appears to me, that the simple dilatation of the lachrymal sac, and skin over it, forming a small uninflamed bag, which discharges lymph, mucus, or both, through the *puncta lachrymalia* upon being pressed, is very properly named by the French *hydrops sacculi lachrymalis*; as it seems to be often occasioned in the same manner as other local dropries, and no way depending upon an affection of the *ductus ad nasum*; because it admits of the same kind of cure as other hydroceles, and because, like them, it often continues several years, without much alteration or inconvenience.

Hydrops
sacculi la-
chrymalis.

I have attempted the cure, by the instrument Fabricius, Scultetus, and Mr. Sharpe recommend, assisted with astringent applications, without success; but upon dividing the sac with the point of a

How
cured.

lancet, and dressing simply, inflammation and digestion have come on, the skin has contracted, and a cure was the consequence. And would not a seton with three or four threads of silk, be equally effectual?

Simple
abscess.

When the tears run down the cheek, and a purulent abscess shews itself, I imagine the lachrymal sac, and the membrane lining the passage to the nose, are inflamed, and thickened; and I commonly apply a bit of sticticum, or, where the inflammation is considerable, a white bread pultice, till the part either breaks or is ready to be opened. And when an incision is made the whole length of the sac, the ulcer is dressed with a mild digestive balsam, lightly applied, and the most irritating dressing used is the honey of roses, sometimes with the addition of a little compound tincture of myrrh; the ulcer often becomes clean, and the membrane

brane lining the duct, if it was thickened or inflamed, probably subsides. I have repeatedly seen the ulcer heal without any other treatment. I have even several times seen perfect success in this instance, by a still more simple process in timorous people, who would not receive any assistance from a surgeon; by applying a soft mild plaster, and renewing it occasionally, till the abscess broke, and afterwards healed of its own accord: which seems to afford a hint that may be turned to good advantage, in the management of this disorder.

Should these methods fail after due trial, and the sore put on a fistulous aspect, we may suspect the *ductus ad nasum* to be firmly obstructed, and that the obstruction must be removed by other means, before a cure can be effected; remembering that if a venereal or scrophulous taint prevails, it must be properly attended to, or no good

The true
fistula.

good can be done. After feeling the bougie, which irritates and inflames, and most of the methods tried which are recommended in the present exigency, the practice of passing a piece of lead of a proper length, and suited to the size and shape of the duct, in my judgment claimed preference; as it so fully answers the purpose, when persevered in till it has restored the passage to its proper state; which I imagine is accomplished by a constant and regular pressure. The upper end of the lead should have a thread or two of silk fastened to it, that it may be pushed lower than the surface, and be removed occasionally to make the parts clean; otherwise when the lead rises above the outward opening, the lips of the little sore heal over or become callous, and the patient must have them pared off before he can be completely cured. I have not yet used Mr. Wathan's cannula, but I have not any doubt

doubt from what that gentleman has said, of its answering the purpose, when such kinds of assistance can afford relief.

It sometimes happens that the above treatment is impracticable, and we are under the necessity of pursuing the method of making a perforation through the bone: yet even in this case, either a piece of lead, or Mr. Wathan's cannula, must be employed after the inflammation is gone off, till a callus is formed. Otherwise when the new flesh rises, the orifice lately made will close up, and we shall have all the work to do over again. But it is quite unnecessary to introduce spirit of vitriol, or lunar caustic daily for some time previous to its application; as the lead alone will be found fully sufficient to prevent this happening. The readiest cure of this sort I ever made, was by first penetrating the os unguis in the common place, with a small trocar, and then par-
ing

Perfora-
tion
through
the bone,
how to be
treated,

ing away a great part of this bone with a small blunt pointed knife. Nor was I under the necessity of using any other assistance than a tent of lint, which was gradually left off, as the parts shewed a disposition to heal; and I had the pleasure of seeing a complete recovery without any sort of trouble.

I took the hint of making the opening in the bone, larger than common, from a cure which followed the coming away of the whole os unguis, and part of the adjoining bone, in a caries which came on after a fever. The tears were discharged through the opening after the abscess broke, till the foul bone became loose and was taken away; and our business was then readily finished with dry lint. In this instance, the disease seemed to begin at the bone, for the pain which I suppose arose from the adjoining membrane, was exquisite before any inflammation appeared;

ed : otherwise foul bone is not very common, when an abscess is formed in the lachrymal sac, &c. at least I have not met with it often in my practice, and I observe it has not been met with frequently by others * ; nor do I see it is to be expected, unless the matter is more acrid than it generally happens to be in this case.

From the corner of the eye, we are naturally led to the eye itself, where we not uncommonly find a small abscess, betwixt the laminae of the cornea, or sclerotica, surrounded more or less by inflammation ; which soon disappears upon the tumor being pricked with the point of a lancet, in the manner St. Yves † recommends : nor are other remedies necessary than those we have already mentioned in the chapter on Ophthalmia, to assist the cure.

Abscess
of the
eye.

* See Sharpe's Surgery, also Mr. Pott.

† Disea. Eyes, p. 196. (Eng. Storkton)

When

When the abscess possesses the whole substance of the cornea, or when formed within the globe of the eye, to mitigate the inflammatory symptoms claims the chief attention. The eye often protrudes, forming what the Greeks call a proptosis; and bursting of its own accord, a staphyloma and blindness is of course the consequence; though if pain makes it necessary, it may be opened by a lancet with relief, and without any possibility of injuring the patient.

**Abscesses
of the pa-
rotid
glands.**

Purulent abscesses which are common to the parotid maxillary glands, should be distinguished from lymphatical abscesses of these parts, which also sometimes suppurate, because they frequently require separate treatment. Of the latter we shall have occasion to speak hereafter, and before we consider the other, it seems necessary to examine in what manner purulent abscesses of the lymphatic glands in
general

general happen *, that we may entertain clear ideas of the methods which ought to be taken to effect a cure ; especially, as the old notions of their being occasioned by immediate deposit of morbid matter into the glands, seems to be erroneous, because it can only be brought about by a retrograde motion in their excretory ducts, which being perfectly contrary to nature, very rarely I suppose happens in the process of the animal œconomy.

Indeed, we have already hinted at the manner in which we apprehend critical abscesses in the cellular membrane, and in the lymphatic glands were formed † ; and we may now recollect what is very well known, that fluids passing through the latter, move from the circumference to the centre ; that in an healthy state their passage is accomplished without incon-

* See vol. i, chap. 2. p. 318.

† See former chap.

venience,

venience, but when they possess acrimony, tumor, inflammation, and abscess in proportion to its virulence, are not any uncommon consequence, as inoculation, the venereal bubo, absorption from putrid ulcers, and a variety of other instances demonstrate.

Inflammation then is a certain criterion, of the fluids passing through lymphatic glands being acrid. It appears too, that every critical abscess in them, is formed by absorption from the cellular membrane, in the same manner, as in the axilla from inoculation, &c. and though in the beginning of this kind of inflammation, while the vessels are sound, and the juices confined in them, discussion may often be made to take place; yet the question is whether the disease ought to be dispersed or not? because by dispersion, we manifestly force morbid matter into the blood, which may be productive of very ill consequences.

Whether
they
ought to
be repel-
led.

sequences. Sir John Pringle informs us that a mate in a hospital, in which there was a malignant fever, had a swelling of both parotids without any previous indisposition; when not suspecting the cause, and applying discutient cataplasms, he was immediately, upon the subsiding of the tumors, seized with the fever then prevailing in that place. Probably because the miasmata, which had been taken into these glands by their lymphatics, were set at liberty, and escaped into the circulation; and is it not just the same thing, making allowance for different kind of virulence, when the glands are loaded with acrid fluids, separated from the blood?

Dr. Russell * tells us of a youth, who had a critical swelling of the tonsils, which subsided upon taking a dose of

* *Oecon. of Nature*, p. 116.

L

salts;

salts; but a most dangerous fever succeeded with inflammation of his lungs, pain of his side, a scarlet eruption all over his breast, neck, and face, from which after seventeen days, he escaped with the greatest hazard of his life. But in a subsequent case of a critical swelling of the testicles, which subsided upon bleeding and purging; a new fever arose, the man became delirious and died in a few days *. I have before mentioned some fatal instances of this kind, and have seen others, which, though they did not kill the patient, I verily believe brought on an ill state of health in some, and diseases of the joints, &c. in others.

In what
manner
they
ought to
be treated.

For my own part, I think critical swellings in the glands, should be left as much as possible to nature; a mild soft plaster only being applied to keep the part from becoming dry and hard. If the

* Chap. iii.

obstructed

obstructed fluids are somewhat acrid, yet are incapable of corroding the vessels, they stagnate in, the inflammation will probably disperse, from their getting at liberty, and passing into the circulation, without the power of doing much injury.

On the contrary, when the stagnating lymph is very acrid, makes its way into the adjoining cellular membrane, and the gland suppurates; the inflammation, I imagine by obstructing the vessels, prevents the absorption of much matter, and the irritation during the gathering, with the subsequent drain, after the breaking of the tumor, establishes health, if care be taken to provide against the absorption of matter from the ulcer, which should be kept open, till an healthful state of the fibres shews it to be no longer necessary.

By what means they become critical.

But those who are fond of dispersing every kind of swelling in the glands, may say, are not swellings of the inguinal

glands daily dispersed with safety, by rubbing in mercury below the part? and had we always an antidote to the virus, the practice might be pursued with advantage. But though mercury is a specific against the venereal poison, it has no power over the virus of a cancer, none over that separated from the blood in fevers, nor many more with which we are acquainted: and, until we can correct matter before we set it at liberty, it seems best to pursue that method which nature herself adopts, especially as in these cases, it is very frequently attended with perfect safety.

When
not critical.

However, the parotid glands do not always suppurate kindly; for though in the beginning the tumor shews signs of suppuration, yet the fluid being inspissated as it collects, a kind of hardness succeeds, and I believe if left to nature, induration would be the consequence: because, upon opening, we find it full of inactive

active viscid lymph, incapable of making its way out. But I do not imagine that letting out this kind of matter at any period, can make them critical, as the nature of it, and the small quantity discharged, is insufficient for the purpose; and am therefore inclined to think with Riverius *, when they happen at the decline of fevers without any benefit, it is owing to the crisis being incomplete. It is to no purpose to wait for the breaking of these tumors, I have found it best to open them the whole length, while some kind of softness can be felt; and by dressing with digestives or precipitate, as the case may require, we tend to render them critical, and prevent a tedious and imperfect cure.

In the cure of the abscess in the cheek, which opens the parotid duct, the use of

*Abscess
in the
cheek.*

* De Feb. Pestilen. lib. xvii. cap. 1. sub finem; see also Pringle Ob. p. iii. p. 276.

Abcess in
the cheek.

the seton is well known and acknowledged, in preventing a fistula, by keeping a passage open for the saliva into the mouth, &c. and I can say in favour of this practice, that having employed a piece of catgut, till a callosity has taken place quite through the cheek, I have several times seen the patient get well, upon removing the cord, by pinching up the skin, and paring off the external edges of the ulcer with a lancet. But I prefer curing the wound by the first intention, with sticking plaster, Fryar's balsam, &c. because it at once prevents any part of the saliva passing outwardly, occasions a speedy cure, and is void of those difficulties which may attend the method of cure Le Dran recommends*.

Abcess in
the an-
trum
maxil-
lare.

In Drake's System of Anatomy †, published in the beginning of this century, we find a curious account of the abscess

* Consultations.

† Vol. ii. p. 535, and seq.

in the *antrum maxillare*, being first discovered by accident : since which time, the symptoms and the cure, by extracting a tooth, piercing the cavity to let out the matter, using injections, and applying a cannula, &c. have been well known. Sometimes extracting a tooth is all that is necessary ; as I lately saw in a man, who had long undergone great pain in the side of the upper jaw, with a swelling apparently of the bone, which constitutes the outside of this cavity. But one of the bicuspidēs * being drawn, above half a tea cupful of matter followed, and he got well without any farther trouble, except a discharge for some time.

But there is another disease of this part, which has not as far as I remember been noticed. The first symptom the patient perceives of his complaint, is a swelling in consequence of lymph being gradually

Lymphatic abscess
in this
cavity.

* See Hunter on the Teeth.

collected in this cavity without inflammation or pain, distending the bone till it becomes as thin as parchment, and sometimes forming a tumor under the upper lip, of a very large size. It differs very much from the purulent abscess in the antrum, which always I believe begins with deep-seated pain, and is attended more or less with the symptoms usual to inflammatory gatherings, none of which appear while the air is excluded. Nor can it be mistaken for the abscess which forms higher up, betwixt the cheek and the bone like a gum-boil; for it may always be known by its appearance, situation, and resistance to the touch.

I have readily let out the lymph which is sometimes glutinous, by cutting out a piece of the bone with the lancet; or when too strong for this instrument, or a knife, I have made an opening with a small trephine, and by daily injecting, without force,
tincture

tincture of myrrh and chamomile tea, or washing the cavity with an armed probe dipped in this mixture, and afterwards applying honey of roses, and tincture of myrrh united upon lint; the tumor subsides in time, and the patient does well: but care must be taken to keep the cavity as clean as possible, otherwise air getting admittance, and being confined, it changes the fluid, which has hitherto been mild and inoffensive (except from quantity), into a corrosive ichor, which may bring on troublesome symptoms.

Every surgeon and every dentist, in any tolerable share of business, must well know, there is a gum-boil in consequence of a rotten tooth, in the lower jaw, which never fails to form a small fistulous ulcer in the side of the chin, that remains, though it be several years, till the tooth is extracted, and then readily heals. Yet I have lately seen more than one instance, where
this

Gum-boil
and fistu-
la in the
chin.

this ulcer has been treated as a cancer, and the patient forced to undergo a course of internal medicines, till the tooth-drawer by his operation, has shewn it would have been much better, to have thrown the bane of Socrates upon the dunghill, than to have given it an opportunity of injuring the organs of digestion.

Quinsey.

Heister says, a quinsey is one of those diseases which require the operation of bronchotomy, when it resists evacuations and endangers suffocation : but if by quinsey he means the *angina inflammatoria*, which takes its rise in the tonsils, I imagine there will very rarely be a necessity for such practice. For in more than the space of forty years, I never knew a patient die of this complaint, except one, where a mortification came on, in consequence of syringing*. Nor did I ever hear of this operation being performed in the circle

* See Vol. i. p. 392,

- of my acquaintance ; and I believe it to be of very little service * in any instance of this kind,

When these glands suppurate, it is well known they sometimes become very large, and render inspiration difficult ; but the breaking of the tumor commonly puts an end to the complaint, or if necessary, it may be very safely opened by a lancet conducted in a silver cannula. Indeed, I once saw a swelling of this kind endanger the patient, but by introducing a piece of wood betwixt the teeth, and making a puncture, instant relief followed a discharge of matter. I have also sometimes given immediate relief by scarifying the glands with the point of a lancet, and occasioning a discharge of blood; after which the matter has commonly made its way in a few hours, through one or more of the scarifications. But suppuration should

* Read Mr. Sharpe on Bronchotomy. Chir. Operat.
always

To be discussed by promoting a discharge from the gland, in the beginning, if possible.

always if possible, be prevented; discussion being the proper method to be pursued in inflammation of these parts; and it may mostly be accomplished, when we are called in time, because the obstructed fluids may often be made to discharge themselves, immediately from the affected part.

By what method.

We have already distinguished the *angina inflammatoria* from others *, and have in some measure pointed out our method of treating it. We bleed if the pulse demands this evacuation; saline purges are given, and repeated, as the inflammation is more or less violent. On the intermediate days, small doses of laudanum, frequently repeated, in a saline julep, helps I think to stop the progress of the disease, probably by lessening irritability. The sticticum, or Sir John Pringle's mixture of spirit of hartshorn, is externally applied, and I think the gargarism he recommends of a

* Vol. i. p. 402.

decoction

decoction of figs in milk and water with the addition of spirit of sal ammoniac, a good remedy : blisters may be useful for aught that I know, but I have never employed them, my chief dependence being in making a discharge from the affected part, by the powders already mentioned. I know of no other remedy so certain in its effects ; and when I call to mind the great numbers of people relieved by them, when steadily persevered in with the assistance of barley water, I cannot help giving them preference to emetic tartar, and other modern treatment used on this occasion. Inflamed parts it is agreed, should be irritated as little as possible, and this rule cannot be more properly observed, in any instance than this ; both on account of the situation of the inflammation, and of the nerves being much exposed. Consequently, whether the inflammation disperses or breaks, emollient gargarisms should chiefly be used ; and should it be apprehended
by

by theorists, that nitre may irritate so as to do injury, I can answer when used in small quantity, in the manner advised, it for the most part does service, and without ever as I could observe doing any harm. I know a lady who was subject to this kind of *angina*, which she prevented, after being troubled with it at times for many years, by washing her throat with Hungary water, upon its beginning to be sore; and the disorder seems now to have left her entirely, owing probably to the nerves being rendered less sensible to irritation, by this application.

Hungary
water its
effects in
this in-
stance.

Angina
externa.

Abscesses in the side of the throat frequently break outwardly, or, when ripe, may be opened with safety; but are sometimes followed by a disagreeable ulcer for a time, in consequence of the juices becoming acrid, which are discharged into the sore, from the neighbouring glands. But it is sometimes necessary to open these tumors before they are ripe, to prevent suffocation.

A gen-

A gentleman had a swelling with inflammation near the edge of the lower jaw, on the right side of the throat, which soon extended itself to the other side, and became so great, that we had just reason to apprehend his being suffocated, if it continued to increase in size much longer; for it had already affected his breathing violently, and he was almost choaked with phlegm, from pressure upon the wind-pipe. It had the appearance of suppurating, and a small quantity of matter seemed to fluctuate under the teguments; but so very deep, that we durst not think of cutting into the side of the throat, where it was perceived, on account of the carotid artery. However, as no time could be lost, I was determined if possible to make a drain from the part; for which purpose I made an incision at the lower part of the tumor in the middle betwixt the sterno-hyoides, was
fortunate

fortunate enough to reach the matter that had formed, and its gradual discharge put the patient out of all sort of danger: but the hardness which would have been dissolved down, could the tumor have been suffered to become perfectly ripe, was troublesome, and long in being subdued. Could discussion have been made to take place in the beginning, it would have been a desirable event in this case, but nature could not be diverted from pursuing her own course.

Abscess in
the axilla.

Abscesses in the axilla require no particular treatment, if they are suffered to become perfectly ripe, the opening made sufficiently large, and the lips of the ulcer not distended unreasonably with the dressings. But abscesses in the breast, are of different kinds, and require very different management from each other, there being

The

The encysted	}	Abscess.	In the breasts, the kinds.
The common			
The glandular			
The chronic and lymphatic			

which we shall notice in their order.

The encysted is a purulent abscess, for- Encysted,
med betwixt the glandular substance of
the breast and the pectoral muscle; is
often slow in its progress, the breast en-
larging in a globular form, and frequent-
ly with little or no inflammation or pain:
nor does any matter fluctuate, till by its
pressure the substance of the breast be-
comes very thin, and it sometimes then
makes its own way out; but if proper
care is not taken, disagreeable fistulas are
often the consequence.

I have sometimes cured them, by mak-
ing a large incision cross ways at the bot-
tom of the breast, and passing a seton
from above under the glands, to keep the
ulcer open and prevent a fistula; and even

M

fistulas

fistulas of long standing have healed by this treatment; but when different sinuses have happened, I have found it necessary to lay them open to finish the business.

A woman came to me with one of these tumors of an enormous size indeed. It had withstood various applications for the space of two years, and at last, being taken for a cancer, had been treated accordingly. The skin was become rough, and the whole tumor felt as hard as a board; but it was different from a scirrhus, and an equality in its appearance, induced me to think it did not belong to the tribe in which it had been ranked. I applied an emollient pultice, which in a little time somewhat softened the skin, and gave me an opportunity of just discovering a deep seated fluctuation. Wherefore I made a puncture with a lancet, in the bottom of the breast, and a very large quantity of tolerable

tolerable good matter was discharged. But though this opening was enlarged very much, we were obliged to make two or three more before we could bring about a cure.

Now when the parts covering the matter are become thin, it is very well known that opening, when necessary, may be made with safety. But in deep abscesses in pendulous breasts, a dangerous venal hæmorrhage, unless prevented, is not an uncommon consequence, from the weight compressing these vessels, and hindering the blood in its return to the heart. Under such circumstances therefore, the breast should be supported by a proper bandage, and no inconvenience from loss of blood will in general ensue. And notwithstanding abscesses of the breast may have been laid open properly, so that no matter could lodge; yet where relaxing cataplasms have been long continued, I

Venal hæmorrhage when it happens in opening breasts, and how to prevent it.

One ef-
fect of re-
laxing
cata-
plasm
long con-
tinued.

observe a greater degree of heat sometimes remains than there ought to be. The lips of the ulcer are inflamed, the ulcer itself is sordid without the least inclination to heal; owing I imagine to the weakness of the vessels, and to the fluids which stagnate in them acquiring acrimony; because upon applying linen cloth four doubled, wet in cold water *, and renewing them twice a day, without any sort of ointment, except a little mild balsam upon lint, to the bottom of the sore, a complete recovery in a few weeks has repeatedly taken place, where a glowing heat accompanied its use.

Common
abscess.

The common abscess is owing to a disease in the cellular membrane, both in married and unmarried women; in which the skin at first is equally distended, and accompanied with pain and inflammation, without any hardness in the glands: in

* More of the use of cold water hereafter.

the

the same manner as happens to this complaint in any other part of the body, nor is there any thing particular required in the cure.

The glandular abscess, is that which happens to lying-in women, from an obstruction of the mammary glands, and stagnating fluids acquiring acrimony. It begins with one or more knotty hardnesses in the breast, without any remarkable pain or tension of the skin, till the *membrana adiposa* is affected, and it then puts on the common globular appearance, which must again be distinguished from the turgency occasioned by a large flow of milk.

In this instance, the fluids not being extravasated, or altered from a mild state for some time, we ought at first if possible to render the glands pervious, and put an end to the malady by dispersion; for which purpose, the bowels should be opened by clysters, or rather where the

Glandular abscess.

Dispersion to be pursued in the beginning.

patient can bear it, by a drachm or two of Rochelle salts given daily, in thick gruel so as to procure two loose stools in twenty-four hours : for these remedies do not only occasion evacuation, but being taken thus gradually into the habit, they more or less render the whole state of the vessels pervious. When purging cannot be borne, the neutral diuretic salts usually assist by promoting urine. The breast should be well drawn, and cloths wet in cool-drawn linseed-oil made warm applied ; which from its effects, I apprehend has power of removing at least slight obstruction : but when the swelling and obstruction is great, I have used the solution Mr. Justamond recommends * with success, and think it a powerful and very useful remedy.

* Sal. ammon. unc. tres, aq. pura. lib. unam ; deinde adde aq. Hungar. lib. unam.

Nevertheless

Nevertheless, in opposition to these efforts in hope of affording relief, the stagnating fluids will sometimes become acrid, make their way through the glands, and seizing upon the *membrana adiposa*, &c. produce an abscess: and when the symptoms of suppuration begin to appear, dispersion is no longer to be thought on, but nature is to be assisted in bringing the tumor to a head. But it must be observed, that these abscesses ought to be treated very differently from what has been generally practised; for the long continued use of emollient pultices occasions a relaxion of the glands, gathering after gathering, and consequently much more cutting than would have been necessary under proper management. Wherever I can use it with propriety, I prefer a well made honey pultice; because it keeps the parts soft without relaxing too much, and kindly promotes suppuration: and yet when the inflammation rises very high,

When
th
suppurate
how to be
treated.

I advise the white bread cataplasm, because it is more cooling, till the abscess becomes perfectly ripe and breaks of its own accord. But, upon the subsiding of the swelling and inflammation, the honey pultice should again take place; all remaining hardness will disappear under its use, and if the discharge be suffered to take its own course, a happy issue will often be the consequence; unless it happens that the place where it breaks, is not in a depending part, for then a counter opening may sometimes be necessary.

Being informed of many cures performed in abscesses of the breast after childbirth, by a lady who lived in this neighbourhood, I obtained a copy of the prescription, from which her salve was made. It consisted of pitch, bees wax, a little frankincense and oil, enough to make it into a soft plaster; which being spread upon leather, was applied to the part
where

where it remained, unless a fresh one was wanted, till the tumor broke. It was then taken off daily, but laid on again as soon as the matter was wiped away, and a hole was cut in the plaster opposite the fore, that as little matter as possible might be confined, betwixt the times of dressing: nor was a new plaster applied while the old one was capable of doing service. If more abscesses formed and broke, they were treated in the same manner, and, without any other process, an easy recovery was the common consequence; which was attributed to a specific property in the remedy, and gained it the reputation of being infallible, both far and near. Yet we apprehend the method before recommended is preferable, from being varied as pain, and other circumstances require; nevertheless, we learn the advantage of not relaxing too much

Chronic
abscess,

much, and how seldom a cutting instrument should be employed in this disease.

There are chronic purulent abscesses in the breasts of women, arising from an indurated gland, which have frequently I am persuaded been taken for scirrhus; and credit has been given both to internal and external remedies, for the cure of cancers, when the disorder has taken its own natural course, and ended by dispersion or suppuration. It is well known that every scirrhus is an induration, but every induration is not a scirrhus; the business is to distinguish one from the other, and there is no case in which the *tactus eruditus* is more serviceable; words being inadequate to the purpose. An induration will feel curdled to the touch, but has not the stony hardness of a scirrhus; it is in general smoother, but in other respects they resemble each other
very

very much, though experience will in time make the difference familiar.

Early in my practice, a woman applied to me with one of these tumors of many years standing. It had always been attended with obtuse shooting pains, was then become large, and the pain much increased; yet it was perfectly moveable, and many surgeons had taken it for a scirrhus, nor was I able at that time, to differ from their opinion: wherefore I persuaded her to let me take it out, but instead of a scirrhus, I found a large quantity of good matter, inclosed within a very thick, and hard cyst, made of the parts which compose the substance of the breast, and I have since met with several similar instances.

In the beginning, where the tumor is not deep seated, we are sometimes fortunate enough to put an end to these diseases, by removing the obstruction with
the

the sticticum, Heister,* and others before him, it should be remembered, say the same application disperses scirrhi, but I rather apprehend they were mistaken about the nature of the tumor, and that it was the disease in question, in which it was successful; because I believe a scirrhous never was, nor ever will be cured by any other method than a removal of the diseased parts. I do not remember ever seeing any effects from internal medicines in these obstructions, and I have tried many. Sal sodæ and the bark united, have often been found useful in securing the glands, they also keep up the appetite and preserve strength, which is a material circumstance, where the patient is to undergo the discipline of the dispensary.

Nevertheless, when the fluids become extravasated in the gland, attempts to dis-

* De. Scirrho.

cufs do not avail; but though the tumor does not difperfe, yet when it is fuperficial, I continue the fame application till it is ripe.

It muft be obferved however, that bringing this kind of purulent abfcess to ripeness when it is deep feated, is a tedious business, and may be the work of years. The beft way is to take out the whole hardness including the matter, while it is fmall; for though thefe abfcesses may fuppurate, break, and heal, yet I obferve, where the hardened parts are not wholly removed by the knife, or efcharotics, they are apt afterwards to become a true fcirrhus, and in a little time, a cancer. Whereas when they are taken away, we run no hazard of leaving the feeds of this horrible difeafe behind; and in every fuch instance that I have feen, a permanent cure has been the confequence.

The

Lympha-
tic abscess.

The lymphatic abscess begins with a remarkable hardness in the gland, is very smooth, void of inflammation and pain for a great length of time; it is very rarely deep seated, and a fluctuation may mostly be felt. It is often long in getting well after it is opened, but the hardness never fails to disappear by the application of a soft lead plaster, and a mild digestive, if care be taken to prevent as much as possible the intrusion of air; otherwise the lymph will be converted into an ichor, and an inflammation may follow, that will require a farther opening, to set the confined air at liberty, and put an end to this symptom.

Many years since, I had my doubts about one of these tumors, owing to its being without fluctuation, and very hard; but was happy when I had taken it out, to find it full of a roapy lymph, because this differs so very much from the corro-

five

five ichor, found in scirrhus tumors. This young woman had a similar tumor in the other breast some time afterward, and knowing its contents, we laid on the *emplastrum de minio fuscum*, and let it alone. In time the lymph by continual distension made its way out, and simple dressings finished the cure. I have several times opened these tumors, nor, do I remember seeing one of them thus treated which did not terminate in favor of the patient.

We have mentioned the propriety of carrying off the matter in an empyema, by absorption, and we shall presently shew that this sometimes happens: but the difficulty arises from the uncertainty of putting the absorbent system into action, unless we can deduce any practice from nervous agitation, which often occasions the lymphatics to absorb matter out of cavities, or to discharge their contents. The former

Empyema.

former we have given an instance of, and the latter is known to happen in those diarrhæas, which suddenly come on upon the mind being impressed with distressing or alarming ideas. But much has lately been said of the power of Fox-glove, in promoting absorption; and I see no reason why it may not be tried *. But this must

* Being informed, twelve or fourteen years ago, of the manner of giving a decoction of the root of fox-glove (an ounce to a pint) in dropsies, at Oxford; I have prescribed it occasionally ever since, sometimes with very desirable success, and often without any effect at all. I have also often tried the leaf, without any material difference that I could discover, except, that the root appears to be a milder remedy, and perfectly free from creating nausea, or any disagreeable symptom. Perhaps the different effects of this remedy, may be owing to obstruction it is incapable of removing, or to the state of the nerves, which in some constitutions, or under particular circumstances, may be incapable of receiving the impression it usually makes: of course the lymphatics will not be put into action, which seems to be a desideratum of more consequence, than in what part of the body the
water

must be done with caution, for the sedative power it exerts, after stimulating, if I am rightly informed, has sometimes been fatal; and the practice of giving small doses, should therefore be strictly observed. But though a very powerful medicine, its effects are uncertain, and we apprehend letting out the matter betwixt the ribs, as advised by various writers, may still often, if not always, be the most certain way of affording the patient relief. Mr. Warren* has given some very in-

water lodges; for if we can discover under what circumstances it promotes absorption, and when not, we shall know when to order it and when to have recourse to other remedies. I have seen broom ashes, for instance, in wine, cure a dropsy, when fox-glove had a fair trial, without any effect. I suppose from a different kind of stimulus being necessary, and by joining deobstruents to fox-glove (emetic tartar) I have succeeded completely in the cure of an hydrothorax, when fox-glove alone was ineffectual; and have known this disorder evade the power of both these remedies.

* Cases in Surgery.

N

structive

structive lessons on this head; and Dr. Hunter, who opened more dead bodies than most men, thinks this procedure adviseable. I join these gentlemen in opinion that it will save many lives, where the collection of matter is owing to simple inflammation, and a greater secretion of lymph than ordinary; where the lungs are sound, and the discharge not interrupted by adhesion to the side of the chest; by preventing suffocation, or matter acquiring acrimony, and injuring the viscera, before it can make its way through the intercostal muscles*.

A woman about thirty years of age, had an *empyema* in her left side, and being six months gone with child, the cough and difficulty of breathing, were exceeding troublesome; nor did there seem any possibility of her living, or going her time, unless these symptoms were reliev-

* See Morgagni, epist. 22. art. 6. 8, 10, 12, 22.

ed. That side was elevated, the ribs were separated at greater distances from each other than usual, and a fluctuation under the intercostal muscles was just perceivable. I made an incision into the thorax in the usual manner, a large quantity of thin foetid matter was discharged, and the patient instantly relieved. But the running continued till after she was brought to bed; and though it was so hot and acrid, as to excoriate all the parts upon which it drained, yet she afterwards got perfectly well, and bore more children.

In this instance the matter seemed to be diffused; but when the disease is attended with a fixed pain, and the part principally affected appears thicker than ordinary, the pleura commonly adheres to the lungs, in which an abscess is formed, that can only be emptied at the place the swelling and pain point out; and if there is

danger of suffocation, an opening may be made for the purpose, otherwise it seems better to leave this work to nature. For in every instance that has come to my knowledge, where the lungs were affected with a scrophulous taint, the patient in the end died of a pulmonary consumption, notwithstanding the assistance of milk-diet, and the remedies usually given on such occasions.

Adhesions of the lungs are known to happen in every part of the chest; consequently when these abscesses take place, they are formed in the same manner. I have several times, in consumptive people, seen matter from the chest, from an uninfamed bag upon the deltoide muscle, or in the axilla; and from a large discharge, death has always been the consequence. I have thought whether making a depending opening betwixt the ribs, might not prevent this kind of termination; but in
every

every instance of this sort I have met with, the ribs were not elevated or dilated, there were no signs of matter in the lower part of the chest, and imagining it to be confined by adhesions I have always been deterred from an operation which I expected would prove useless.

These remarks, however, are not to extend to encysted abscesses, which sometimes happen in the chest; or to abscesses formed betwixt the pleura and intercostal muscles, which point outwardly, and are opened and cured. Le Dran * gives us instances of these sorts, with an account of the symptoms, and other useful reflections on the subject. Mr. Gooch † notices a similar case arising originally from a bruise; my own practice also, has given me an opportunity of confirming the opinion these gentlemen advance. I ob-

Encysted
abscesses
in the
chest.

* Ob. 33 & seq.
p. 139.

† Cases and Remarks vol. i.

serve the adjoining rib being foul is not very uncommon †, and may no doubt sometimes occasion the complaint; at other times no disease in the rib happens, and I have seen them arise slowly without inflammation, pain, or cough, and the patient has gradually recovered upon the matter being discharged. But to whatever cause abscesses of the chest are owing, the topical treatment is nearly the same; for the external opening must not be suffered to grow up while there is any discharge, and the rest will chiefly depend upon nature.

A man about thirty years of age, came to me with an abscess on the right side of the *sternum*, accompanied with pain, a cough, difficulty of breathing, and hectic symptoms; upon letting out the matter, though the pleura was apparently uninjured, yet I found one of the ribs foul,

† See Carious Bones.

The symptoms however were mitigated by this operation, but far from being entirely removed; the cough and a purulent spitting remained, a pain and weight under the lower part of the *sternum*, still occasioned great uneasiness; the discharge from the ulcer, at the subsequent dressings, was much greater than we had reason to expect; and by passing a curved probe, I discovered the *mediastinum* was in a great measure the seat of the disease, and that the aperture from under the bone, was not in a depending part. Wherefore, after removing the skin, &c. I applied the trephine to the *sternum* twice, in such a manner as to make one opening rather more than an inch long, through which the matter all drained away freely, and the man perfectly recovered in due time. Nor do I know of any particular caution in performing this operation, unless it is

Abscess
in the me-
diasti-
num.

to be remembered that the bone is very readily sawn through.

Hepatitis.

It is well known suppuration is often prevented in a hepatitis by bleeding, purging saline deobstruents, opium, warm fermentations, and blisters upon the part; if employed while the obstructed fluids are confined to their own vessels, and before they have injured or dissolved the parenchymatous part of this viscus: and when the external membrane is inflamed, the pain and fever commonly induce the patient to call for speedy and active assistance. On the contrary, when the *parenchyma* is the seat of the malady, the symptoms are more obscure, the pain, as happens in the internal inflammation of other glands, is rather obtuse than violent; and though the pulse keeps up perhaps at 120, the heat of the skin is not much above the natural standard: which I am fearful, has sometimes occasioned the disease

case to be overlooked in the beginning, and a neglect of the remedies which might have hindered its becoming chronical, and terminating in an abscess. Because in every instance of this sort, I have seen, where remedies were used in time, the disease was cured by discussion; and wherever such a pulse is discovered, accompanied with an inward pain (more or less) of the glandular or parenchymatous parts, I believe we may be certain that an obstruction exists, which ought to be removed as soon as possible; and that the slight degree of pain and heat, and slowness towards maturity, arise from the inward part of the glands and parenchymatous substances not being very sensible of irritation.

I have never met with an instance in my own practice, where an abscess in the substance of the liver broke outwardly, though I have known an abscess formed,
about

Abscess
in the
liver.

about the lowest spurious rib on the left side, by a large red worm passing through the biliary ducts. The tumor had broke, and discharged a considerable quantity of matter, before I saw the man, and the ulcer had degenerated into a fistula; but by the quantity of bile that daily came away along with matter, the source of the disease was evident. I dilated the orifice a little, to give a free exit to the discharge, and in three or four days afterwards, a living worm shewed itself which was taken away, and the sore healed in a moderate time. The man could give no account of his feelings, except that he had a deep, dull pain, and uneasiness in his left side below the chest, some time before the gathering appeared; I therefore could not help suspecting, that the worm had entered in at the duct in the *duodenum*, and crawled to the opposite side, through one of the branches of the hepatic duct.

Nevertheless,

Nevertheless, it is well known there are cases upon record, where the matter being seated upon the surface of the liver, has made its way out through the muscles of the abdomen*, in consequence of an inflammatory adhesion, between the external membrane of this gland, and the peritoneum. But by avoiding incisions deeper than the skin, or any rough treatment, that might separate this adhesion, and make way for the matter to pass into the cavity of the abdomen, and by keeping the ulcer sufficiently open, giving the bark, and procuring a stool once or twice a day, the patients have recovered. On the contrary, when the abscess was deep seated, I think we may observe it has more frequently happened, that they sunk under the discharge, or in consequence of a colliquative fever, brought on by

* See Memoirs Roy. Acad. Surgery Paris, and Morgagni who points, to other writers upon the subject: besides which, there are modern cases published.

the absorption of matter : though even in this case, the patient should not be given up, because by the use of antiseptic lotions, and corresponding internal medicines, some have recovered under these desperate circumstances. But I have not long since seen a more favourable termination of this disease.

Empyemas and an abscess in the liver, cured by absorption.

A boy about ten years of age, immediately after having a pleurisy, and an hepatitis, had every symptom of an *empyema* in the left side of the thorax ; a manifest fluctuation of a large quantity of some kind of matter, on the surface of the right side of the liver appeared, which seemed to make its way out through the skin : but absorption taking place, the matter was gradually carried off by urine and stool, and the patient recovered a perfect state of health. It is impossible a recovery could be more complete, or accomplished with more ease ; and can there

there be any doubt of the preference of this method, where it can be properly put into execution, to making an opening and admitting external air?

I can only add two instances to those already written by others, of persons being restored to health, by part of the *parenchyma* of the liver, mixed with black blood, &c. being discharged by stool, in consequence of the inflammation possessing the concave part of this gland, and of an adhesion taking place betwixt it and the colon, or to the matter escaping by the biliary ducts*. I did not see either of these men, till the disorder was far advanced, nor had they been attended by any of the faculty; but I was informed that one of them, was seized more than

Abscess in the liver carried off by stool.

* Those who wish to understand this subject thoroughly, must have recourse to the Memoirs just referred to; where they will find it well handled by Petit and Morand.

a year before, with a pain in his right side, below the ribs (*hypochondrium*), attended with a fever, which lasted more than a week, but then abated; and after some time a fulness was perceived (attended with a dull pain) that was then increased to a large size. I could not discover that the other had any previous pain or fever, but that a fulness of the affected part gradually came on, and seemed to endanger his life very much. Indeed they were both under alarming circumstances, and had all the troublesome symptoms which accompany obstructions in the liver; but though they were reduced to skeletons, they soon recovered by the assistance of kitchen physic, after the fortunate event took place. I think their cases prove, that they have reasoned right, who suppose that these abscesses are sometimes the consequence of inflammation which has long subsided, and sometimes of chronic

nic obstruction, in which inflammation did not interfere : and upon these principles, if we are called early enough, our views must be directed to prevent a dissolution of the liver.

We are told by writers who have dissected those who died of abscesses in the liver, that, by adhesion, the matter sometimes makes its way through the diaphragm into the thorax, and produces an *empyema*, that will seldom admit of a remedy : nor do they speak more favourably of the extravasation of the matter from an abscess of the liver, into the cavity of the abdomen ; and yet I could wish we were to reflect whether assistance may not sometimes be given to this desperate malady, where a colliquative fever does not interfere, and speedily carry off the patient. Every practitioner of experience must know, that extravasations in this cavity tend to its fore and lower part ; and that when the matter makes its way

Extravasation of matter in the abdomen.

out

out the patient often recovers; even though the intestines are corroded through, and the faeces discharged for a time, at the external ulcer. May it not therefore be proper to make an opening in the most prominent part below the navel, in the manner Petit and Garengeot * recommend, to discharge the matter which has drained from the liver? Waiting in this instance for the forming of an abscess, would probably be the loss of a patient; and I am apt to believe, we may sometimes proceed with confidence, though no other symptoms of the matter being collected shew themselves, than that we have mentioned; because I have lately seen matter form an uninflamed circumscribed tumor, or rather a prominence in the fore-part of the abdomen, from the navel to the *os pubis*, in which I could easily discover a fluid by its fluctuation.

* Mem. Royal Acad. Surgery Paris.

Nor should I have hesitated a moment about making an incision to discharge it, had there been any prospect of saving the patient. But he was so much reduced by a complaint in the lower viscera, which brought on the suppuration, that I was apprehensive an operation would have the appearance of killing him, who afterwards died of the disease; wherefore I left the whole to nature assisted with opium, cordials, a light nourishing diet, and suitable applications. In a week or ten days time, a large quantity of matter was discharged at the navel, and he died. But with what success matter may be discharged from the abdomen, the following cases will prove.

A boy about six years old upon catching cold, when he had taken a dose of calomel for the worms, was seized with a violent pain in his bowels, which was somewhat relieved by an opening mixture

O

given

given by his apothecary ; but upon an inflammatory tumor appearing, betwixt the navel and the os pubis, I was desired to see him. A pultice was applied, and continued till the abscess broke, when matter and fæces in large quantity were discharged together ; notwithstanding which he had sometimes stools, during the gathering of the tumor. Nor did this kind of evacuation cease for some time, though the patient had natural stools once a week, but by keeping the parts as clean as we could by antiseptic lotions, &c. this very offensive and disagreeable ulcer, which would have admitted a duck's egg to have been dropped into the abdomen, without touching the sides, was cured by nature in the space of six or eight months ; and when the boy was grown up, he went for a soldier, and served in several campaigns. I have lately seen an abscess form a little above the groin, on the edge
of

of the pyramidalis, from large red worms * making their way out of the intestines ; and upon their removal, the patient got well with very little trouble.

A woman, betwixt twenty and thirty years of age, had been tapped twice for an ascites, and a large quantity of water taken away at each time ; but after the last operation, the puncture did not heal, and in a little time, a substance they did not understand, protruding, I was desired to see her. It was evidently a part of a cyst, and, as it had already dilated the fore, I persuaded her to let it alone till the opening became larger, in hope of a better opportunity of affording relief. Accordingly in ten days or a fortnight, the protrusion was much larger, and by the help of a dry cloth, a cyst that would contain five or six gallons of water, was gradually extracted. More than a quart of matter

The cyst in a dropsy taken out of the abdomen and patient got well.

* See Ed. Med. Ess. art. 19, p. 178, vol. i.

immediately followed, and more was daily discharged for some time, yet the woman recovered without farther trouble than keeping the parts clean, and afterwards bore several children.

Other
abscesses.

When abscesses are formed in any other part of the abdomen, point outwardly, and shew signs of suppuration, I believe they are generally in consequence of inflammatory adhesion with the peritoneum; and these happen indiscriminately wherever the adhesion takes place. I have seen them on each side the *hypogastrium*, and known them to originate from plum-stones, which have been swallowed, and from other local causes; but the patient often recovers.

Nevertheless we sometimes meet with abscesses in this cavity, which are not confined to any of these rules. A girl about five or six years old, was troubled with an enormous swelling of the abdomen,

men, attended with a bad state of health, which being taken for a worm case, she was treated accordingly; but medicines did not avail. Her whole dependence was therefore upon such nourishing food, as her parents, who were poor, could provide, and she went on for a whole year without expectation of recovery: but the disease at last terminated fortunately, by a discharge of a great quantity of matter *per annum*.

An old woman, whose abdomen was much swelled, had a large inflammatory abscess at the *præcordia*, which broke; and upon dilating the orifice by incision, a considerable quantity of matter, together with some hydatids was discharged: they were followed by others of various sizes at times, till more than a peck, besides a large quantity of matter, were evacuated, whence the abdomen subsided, and the woman got well. I have seen

From hydatids.

two instances where hydatids in great quantity came from the abdomen, in a ropy kind of matter through the muscles of the back ; which shews that though betwixt the navel and the pubis, may be the most convenient place for the exit of matter from this cavity, yet the patient will sometimes recover, from whatever part it is discharged.

betwixt
the abdo-
minal
muscles.

Perhaps they are not equally dangerous, but I have often seen abscesses formed betwixt the abdominal muscles, more troublesome ; they commonly point from under the *obliquus descendens*, at the edge of the tendinous line, which extends from the *os pubis* to the *sternum* ; and frequently leave winding sinuses, that are not very readily traced, behind them. These are generally first discovered, by the largeness of the discharge at the subsequent dressings to the breaking of the tumor ; but a director being introduced, we may divide

divide the muscle safely, and if more sinuses afterwards shew themselves, they must be dilated one by one, till we have gone through the whole business, and laid a foundation for a cure, which will then follow in the common manner.

But the most dangerous of all abscesses that belong to the abdomen, is the lumbar abscess, that forms in the cellular membrane about the psoas muscle, and points in the thigh, groin, back, or sometimes at the anus. Of these patients few I believe recover, nor indeed is it to be expected; as the source of the disease can seldom be laid dry, and a caries of different parts of the back-bone is sometimes added to the malady. Some however, I have seen survive these collections of matter, by the tumor being suffered to break of itself, and its contents to drain gently off through a very small aperture, which prevents the free ingress of air,

Lumbar
abscess.

and violent symptoms : for when a large tumor of this sort forms on the inside of the thigh, and breaks in a large opening, in such a manner that the air has ready passage, we frequently see a violent colliquative fever succeed, that closes the scene in a very short time.

But though small openings should be obtained if possible, they too seldom secure the patient ; for when the tumor is pierced with a small trocar, yet, if a kind of curds and whey, or poor thin matter, is evacuated, inflammation, &c. follows ; or if this does not terminate the patient's existence, the opening degenerates into a fistula, and a true *marasmus* is the consequence of a large and tedious discharge. The greatest hope of recovery is when the matter is mild and good, owing perhaps to its being a common purulent abscess ; whereas when it is sero-purulent, it seems to indicate a scrophulous origin.

To

To carry off ripe matter from these abscesses by absorption, is much more desirable, if it can be accomplished; but I am sorry to say, my attempts in this way have not answered my wishes. I find purging cannot be borne, when the disease has made any considerable progress; and though I have not seen the tumor abated by vomits, yet instead of weakening, they frequently amend the health of the patient. It remains to be tried whether the methods spoke of in empyema can be serviceable; but if any device could be hit upon that would put the absorbent system in action, it might perhaps sometimes elude the event, that in this instance too frequently happens.

On Abscesses and sinuous Ulcers about the Anus.

Abscesses happening about the anus, have symptoms peculiar to themselves, which

Symp-
toms at-
tending
them.

How to be
relieved.

which must if possible be mitigated during the progress of suppuration. It is well known, that tenesmus and strangury, by consent of parts, are reciprocal; and that the irritation from a swelling about the rectum, and from a retention of the fæces, &c. do not only bring on these symptoms, but even sometimes a suppression of urine, and a train of other agonizing symptoms; which are happily alleviated, if not removed, by keeping the bowels open, by giving opium by emollient anodyne clysters, and the warm bath. In other respects, they are to be treated like the same disease in other parts of the body, whether it be of the purulent, or gangrenous * kind, or accompanied with an erysipelas †; nor does the subsequent sinuous ulcer require any other treatment, than being laid open by a sim-

* See Treat. on Gangrenes.

† See Erysip. accompanied with suppuration.

ple incision, and dressed with light easy dressings. The treatment of this disorder, however has been thought to make a very difficult, and important branch of surgery; many books have been written upon the subject, and a variety of contrivances recommended, which have only tended to embarrass nature, and render a cure difficult, which might have been accomplished with ease to the patient. The pernicious influence of false theory, is perhaps no where more evident than in the present instance; one mistake leading to another more enormous, till the poor patient is doomed to a scene of torture, by burning, scalding, and unnecessary cutting, to receive commonly a bungling cure; and a brief recital of these proceedings, may be a good caution against forming principles without comparing them with nature: for in examining many opinions, which are thought to be consistent with

with reason, we find that neither nature or reason have been consulted about the matter.

History
of the
disease
and its
cure.

Hippocrates informs us *, that *fistulæ* about the anus, are occasioned by bruises, tubercles, rowing, riding on horseback, &c. bringing on abscesses, that extend to the rectum; and there breaking, degenerate into this complaint, in which a sanies lodges, and there is a discharge of excrement, wind, and much offensive matter. But when tubercles (*κονδυλωματα*) arise, he advises the cutting them † while in a crude state, to prevent suppuration, and this kind of termination. He treated this disease sometimes by a palliative, and sometimes by a radical method of cure, in both of which he employed the *æruge æris*, &c. it being a received opinion in his time, that detergents of the eschora-

* Lib. de fistulis.

† See the manner in Celsus lib. 7. cap. xxx.

tic kind were necessary to bring the diseased parts into a healing state. When he pursued the palliative method, after giving the root of heart-wort * in honey and water, in a morning fasting, he introduced a tent of lint moistened with the juice of milk-thistle, and sprinkled with the flowers of verdigrise, into the sinus, for the space of seven days; and then alum, myrrh, &c. were used for drying it within, and closing the orifice without.

When a radical cure was attempted, a tin probe with an eye in the point, and armed with crude flax bound round with horse-hair, to prevent its rotting, was introduced into the sinus, and the forefinger of the left hand into the anus at the same time. This meeting the probe

* He says this root will purge away the ascarides, or that if any remain they die.

bent it, and brought it, together with the upper part of the thread, out at the anus; upon which the probe was withdrawn, and a compressure made, by twisting both ends of the thread together, the patient being then sent about his business. Afterwards the ligature was twisted daily as it became loose, flowers of verdigrise, &c. were applied, and if these did not sufficiently accomplish the separation, the parts inclosed in the ligature were divided by incision. In deep seated *fistulæ* he made use of a collyrium; but in this instance, he had no hope but from the knife. Nor did he neglect to treat of the intestine being inflamed, of the consequent pain and fever, tenesmus, and strangury, usual to this complaint, and of the method of curing these symptoms.

In another place*, Hippocrates speaks of destroying callosity by medicaments

* De locis in homine.

that

that bring on putrefaction ; and Celsus, in his section on *fistulae* in general, recommends caustics for the same purpose ; but it may be remarked, that neither of them say a word of calli or callosity in the present instance, nor of destroying them by these kind of remedies. Celsus † copied Hippocrates in the use of the ligature, but not exactly for the same purpose. Hippocrates inclosed in it a part of the rectum, whereas Celsus seems only to have employed it, to open *fistulae* in the nates below the anus ; for he says, a probe being put into them, an incision must be made in the skin at its farther end, and the thread, &c. drawn through and tied daily, which cuts the skin above the fistula, and at the same time, the part that has been divided heals ; which method he says is long in curing, but without pain. On the contrary, when the

The difference betwixt the practice of Hippocrates and Celsus.

† Lib. vii. cap. 4.

fistula points inwards, or consists of several sinuses, a knife may be necessary. Wherefore, in these kinds, the probe must be introduced and a small piece cut out, to prevent a speedy re-union of the lips of the wound, and that lint may be lightly applied. If from one orifice there should be several sinuses, that which runs straight must be opened with a knife, and the others which branch from it with the ligature. If any one penetrate so deep, that an instrument cannot be safely used, a collyrium should be put in, under which circumstances we imagine he gave up the case, and meant only to keep the sinus clean; because Hippocrates who introduced this practice, knew very well that it would not cure the patient.

Galen.

By Galen's time, a syringotomy had been introduced* for the cure of *fistulae*; but though he treats of sinuous ulcers,

* Meth. Med. lib. vi. cap. 4.

and

and fistulæ in general †, I do not find that he takes any particular notice of the fistula in question. *Fistulæ in perineo*, from tubercles || in the urethra, were known to him, and Paulus §, by taking these and other fistulæ into the same chapter with the *fistula in ano*, confused the subject, and sowed the seeds (as we shall have occasion to shew) of perplexity that we have not yet got quite removed.

Paulus.

This compiler distinguishes those fistulæ which discharge their matter by the anus, and though he does not apply them in practice, he marks the distinction of those which perforate the intestine, and those which do not ; and they have since been copied by much the greater part of writers on the subject. He speaks of the winding fistulæ, and says in *almost all*

† De Art. Cur. ad Glan. lib. ii. chap. 8.

|| In Aphor. Hip. com. iv. 82.

§ Lib. vi. cap. 78.

of them a callus arises in the orifice. He reckons those incurable which perforate the neck of the bladder, the articulation of the thigh, or which extend towards the great gut. He says, those heal with difficulty in which an orifice is wanting, also those which are concealed and terminate in the bone, with many clefts ; but the rest in general are readily cured.

For this purpose he makes three distinctions in the treatment of this disease. When the whole of the fistula was within sight *, it was opened by an incision in a strait line. When higher up he advises to introduce with one hand a knife into the sinus, and the index-finger of the other into the anus. If the gut was not already perforated, the sharp end of an instrument made for the purpose, was forced through it, and bringing down

His method of operating

* This is the fistula below the anus which Celsus cured with the ligature.

the

the point in contact with the finger, the whole was laid open by a simple incision. But when a callus interfered, it was removed by excision, always avoiding injury to the sphincter; for he says, when this is wounded by rashness, an involuntary discharge of the fæces happens. He looked upon those to be timid surgeons, who followed Hippocrates's method of curing by the ligature; and he thinks the *speculum ani* on this occasion of no use: which practice I imagine was general among the Greeks, because it was afterwards pursued both by Leonidas and Aetius *, though some followed the method of cure by es-

Aetius;

Nevertheless, Albucasis extended this unnecessary and painful practice, by preferring the actual cautery, which he in-

Albucasis •

* See Aetius tetra. lib. 4th sermo. 2 cap. xi.

roduced into fistulæ that did not penetrate the intestine repeatedly, till all the deceased parts were burnt; and then finished the cure, with ointments proper for separating the dead parts, and healing the sore; and if this method failed of success, he deemed them incurable *. Fistulæ which penetrated the intestine, were also thought to be incurable, but he cured those which were superficial, by an incision made with a curved knife, and those under the same predicament at the verge of the anus, with a ligature. .

Avicenna.

However, his countryman Avicenna, though in this chapter *De curatione fistularum*, &c. he speaks of the necessity of using the knife, or actual cautery in old fistulæ of other parts, yet he had not recourse to either of them in this com-

* Perhaps this practice might originate in the famous Aphorism of Hippocrates, Quocunque non sanant medicamentis ea ferrum sanat : quæ ferrum non sanat ea ignis sanat : quæ ignis non sanat ea incurabilia putare oportet. Sect. 8. Aphor. 6.

plaint,

plaint : for when the *fistula in ano* did not penetrate the intestine, he attempted the cure by medicaments ; and when there was an aperture in the gut, by the ligature ; from all which premises the practice in the cure of this disease has mostly since been deduced.

It is said, “ Guido Gauliaco, introduced surgery into Europe from the “ Arabians ;” some of whose doctrines and practice, indeed, he copied and explained in a very brief compass, and by just pointing out the parts he selected, we shall hereafter more readily detect the errors that have crept into practice. Guido.

He copied the doctrine *fistula est ulcus profundum, & sinuosum, cum collofa duritie a parte interiori, a quo procedit ut plurimum sanies virulenta manans**. And in his chapter *De fistulis que fiunt in*

* De Fistula cap. v.

ano † he hands down to us the confused account of fistulæ belonging to this part, and thus added to that perplexity, which will hereafter be very evident. He says, some fistula which are formed in the anus penetrate the intestine, others not, but spread to other parts; some of those which penetrate to the intestine, go three fingers deep towards the middle of the *sphincter ani*, and some tend outward towards the margin of the anus. Of those which do not penetrate the intestine, but tend to other places, some go to the flesh of the hip, and exterior margin of the anus, others towards the hip-bone, and *os coxygis*, and some towards the bladder and root of the penis, which differences make a diversity in the method of cure.

The cause of these maladies, and the method of distinguishing one from the other, are then attended to; the incur-

† Chirur. tract. 4. doct. 2. cap. vii.

ble fistulæ are enumerated from Albucasis, and he says it is impossible to come at the root of those, which are intricate and deep seated; and that all agree, a fistula penetrating above the middle of the sphincter, cannot be cured without leaving a worse disease, an involuntary discharge of the fæces behind; and it is therefore better to palliate only in such cases. But a fistula which does not penetrate farther than the flesh near the anus, (*nates*) or hip, or those at some distance from the anus, which do not penetrate far, may be cured without danger, according to Rhasis. For which purpose after attending to the habit of the patient he directs when a fistula does not penetrate, but goes into the flesh, to dilate the orifice by a piece of gentian or a knife, and then to cauterize the part with an actual or potential cautery; but Brunus and Theodosius give preference to the former, and he approves

their choice. When the fistula penetrates, he adopts the method of cure by the ligature *, in the manner of Hippocrates from Abucasis, or by pulling down the ligature as low as possible, and then dividing the parts it inclosed with a curved knife. His preceptor he says, passed a curved director into the sinus, and cutting upon it with a red hot knife, laid the internal and external orifice into one ; finishing the cure with fomentations, digestives, &c. Nor does he think after the incision is made, the practice of applying escharotics necessary. And thus the practice of cauterising in this disease, in preference to the rather milder methods of the Greeks, descended among us.

Vigo.

One hundred and sixty years after Guido, Johannes de Vigo disapproved of the cure, both by the ligature and the

* See Abucasis, backward.

cautery ;

cautery ; because they could neither of them be applied without great pain, or endangering an abscess : and though he never used the knife in fistulæ which did not penetrate, unless detergents *, &c. were found insufficient, yet in those in which there was an opening in the gut, he followed the practice of Paulus, of laying them open by a simple incision. He says, “ when a fistula perforates” (*below the sphincter*) the foremost finger of the right or left hand, as is most convenient, being anointed with oil of roses, must be introduced into the anus, and then a crooked sharp instrument, through the fistula till the point is felt under the finger. An incision from one opening to the other is then to be made, bringing the point of the instrument directly through the anus, that the hæmorrhoidal veins may not be divided. The

His method of cure.

* See Avicenna, loc. cit.

wound

wound was dressed for two or three days, with a digestive composed of turpentine, the yolk of an egg, and a little saffron; or, when a callosity remained, he removed it with *Ægyptiacum*, or a powder of mercury; finishing the cure with milder applications, usual to the cure of ulcers immediately following wounds.

Parey

* however, who lived a few years after Vigo, (and whose humanity was evident) except in superficial fistulæ, preferred the ligature to the knife, because it did not occasion any hæmorrhage. If there was not already an aperture in the gut, he made one in the manner of Paulus, with a sharp pointed needle contrived for the purpose; and to the best of my recollection, he is the first writer, since the days of Paulus, who omits to caution against dividing the sphincter. Perhaps he knew

* Lib. xiii. cap. 21, 22, 23, must be read to understand him.

it,

it to be of no consequence, otherwise I think he would have mentioned it; because in general, he copies closely the common doctrines that had been maintained.

On the contrary Fabricius * who was Fabricius, a contemporary with Parey, recommends a division of the parts by syringotomy, because it is an operation performed with great expedition, and is much less painful than the others. He had his doubts however, about the safety of penetrating the intestine with an instrument. To perforate it, says he, has been a long time against my inclination, and I have accordingly abstained from it. But when I found by repeated experience, that none, or but very few of this sort of fistulæ submitted to a cure; and reflecting on the extreme difficulty, with which the cure was effected, the fistula never tending to

* Lib. iii. cap. 12. and Chirur. Oper. cap. 93.

increase

increase nor cicatrize ; I at length changed my resolution, and when I found the probe to be *pretty near the anus*, I perforated the intestine, the cure succeeding afterwards very well ! Yet he thought there was danger in this procedure, because a costive priest died after having wounded the rectum, by thrusting up a sharp pointed stick, to remove hardened excrement, and thus contrary to his own experience, threw a stumbling block in the way of improvement.

Marchettis.

Marchettis, who pursued the same method of practice with Fabricius, endeavoured however to remove this impediment ; for he says *fistulae which creep upwards in a line with the rectum, although they do not perforate it, yet they can never be healed unless the intestine be divided* : and to avoid the inconvenience said to be brought on by cutting the sphincter, he informs us that he left part of this muscle as broad

as

as a ring untouched, with happy effect. The hint however he gave of the uselessness of escharotics, had it been attended to, would have been of much more consequence in treating this malady; for he says, I have sometimes observed a callus to be taken off, with only digestives, which though it may seem strange and even impossible to some, I have frequently experienced; particularly in a woman who was affected with an old fistula, which made its way into both nates, and through the *foramina* of the *os coxendix*, filled up with the *musculi obturatores*, which were hardened with a callus, to the thickness of the middle finger, which I cured by dividing as far as the bones; and afterwards applying a digestive the callus became softer, and easily cast off like the bark of a tree. In the space of five months the woman was perfectly cured, and remained well in health many years

years afterwards. Here nature was held out against art; but as no pains were taken to shew the same event must in general happen, it was I apprehend looked upon to be accidental, and not considered as a precedent.

Vau-
guion.

Vauguion * indeed who in the beginning of this century followed the method of cure by a simple incision, as practised by Paulus and Vigo, applied digestives twice a day, to remove callosities; caustics in his opinion being only required, when induration would not give way to these remedies; except, when the bottom of the fistula was very remote from the anus, he then opened it by their assistance.

Operates
in the
same
manner as
Paulus
and Vigo.

Otherwise when the fistula opened outwardly, he enlarged the orifice to introduce the incision knife, with its probe. This knife was crooked and slender, and

* Chirurg. Oper.

made

the probe long, pointed * at the end, and made of well tempered metal, to prevent its breaking in the operation. Its edge being covered with a fine thin silver chape, or sheath, to keep it from hurting the patient when thrust in, which was taken off when the knife was in the sinus, before the incision was made. But his operation was nothing more than what we have already described. He put the fore-finger of his left hand up the anus, and introduced the knife into the external orifice of the fistula, and feeling the point of the probe upon his finger, perforated the gut with it, and then drawing one end of the probe with his finger, and the other with his hand, cut through the whole at † once. But his incision did not extend far up the rectum, because he cautions against wholly dividing the sphincter muscle. He af-

* This was afterwards called the French instrument, and described with a blunt point. All the knives used on this occasion are to be seen in Heister.

† Ob. 49 and 51.

terwards

terwards applied digestives and the usual remedies to finish the curer

Saviard.

Saviard (and no doubt other French surgeons) pursued the same method of practice, without regarding the sphincter ; but the time was not yet come for the introduction of this simple process : practitioners were still persuaded of the necessity of destroying callosities (as they call them) by force, and the hint of Marchettis and the practice of Vigo, and Vauguoin were unnoticed.

Turner.

Turner whose surgery was in this instance at least very coarse and barbarous, destroyed callosities by escharotics, before he opened the sinus with his probe scissars, which he preferred in this business. Le Dran, nearly about the same time, opened sinuses formed betwixt the coats of the rectum in consequence of piles, their whole length by incision, and cured the wound by simple dressings ; but in other cases his mind being

being strongly possessed with the idea of callosities, and seeing the method of cure by the caustic tedious, uncertain, and unsafe, he revived indiscriminately the worst part of the practice of Celsus and Paulus; by laying it down as a rule, that whenever the intestine was penetrated, the abscess must not only be opened its whole length, but that part of the intestine, together with the callosities, must be cut away, and the bleeding occasioned by the operation suppressed, by a strong styptic water, which in a few minutes would form an eschar.

Chefelden pursued the same method, upon what he thought an improved plan, even in cases where apparently Mr. Le Dran would only have made a simple incision, and applied simple dressings. It is well known, he introduced one of the blades of the polypus forceps into the fistula, first dilated with sponge tent, and the other into the anus, and then firmly

Chefelden.

Q

holding

holding so much as he thought proper, he cut it out with a pair of scissars. When he could not cure by this method, he left the internal discharge into the gut, as a useful issue, to continue the benefit nature designed by this disease*. He judiciously cautions against performing this operation, when the patient is troubled with the piles, because he had known one in that case bleed to death. I have met with some who had formerly undergone this discipline, and were obliged to keep their bowels open constantly, as the stricture about the anus, prevented their having a stool without the utmost difficulty.

Indeed so great became the madness of cutting away portions of the buttock to accomplish a radical cure in this malady, that we even read of some who unfeeling-

* Q. Would not this doctrine be equally forcible against performing any operation at all?

ly

ly took off by incision the lower part of the rectum; and I very well remember more that thirty years ago, a gentleman under the hands of a surgeon of the first eminence, for the cure of a sinuous ulcer which passed some way on the side of the rectum, who cut out a large piece of skin and flesh adjoining to the anus, and suppressed the hæmorrhage he brought on, by cramming the wound full of lint dipped in scalding oil of turpentine! And though Mr. Sharpe very well knew, that a simple incision in sinuses, into and about the gut, would sometimes suffice, yet he thought it generally safer to cut the piece of flesh surrounded with these incisions quite away, and when callous absolutely necessary, or that the callosities must be wasted afterwards by escharotic medicines; which he says is a tedious, and cruel method of cure. This practice being compared with Paulus, evinces, that he

Sharpe.

only cut away callosities, whereas Mr. Sharpe cut the parts away, whether they were callous or not.

Cutting
through
the
sphincter,
not re-
garded.

By this time the apprehensions of inconvenience, from cutting through the *sphincter ani*, were entirely done away by Dunn, Berbeck, Heister, Sharpe, and others. Surgeons became bolder in extending their incisions upwards, and running from one extreme to another, they sometimes cut as high as they could reach with their finger, with a strong, long, pair of probe scissars made for the purpose; and indeed I believe they made bloody work of it, till within the last twenty or thirty years, when a milder method of practice gradually took place.

But sur-
geons run
into an-
other ex-
treme.

In this period, Mr. Pott reviewed the subject, and after shewing the difference betwixt induration and callosity, and the mischief that had arisen from considering every sinuous ulcer about the anus as a fistula,

fistula, he recommended the most eligible part of the ancient practice, of curing by a simple incision, with some improvement in the point of the probe knife, used by Dionis, on another occasion: and adopting the modern mode of dressing, even where the inside of the sinus is hard, and does not afford good matter, he disapproves of escharotics, and only advises lightly scratching or scarifying, with the point of a lancet or knife, though he allows a little of the lips of the wound to be cut away, where there are a multiplicity of external orifices, or where the lips or edges of the wound are in a loose, flabby, hardened, inverted state, near to the fundament.

Whether this practice is adopted in France I know not, but Mr. Foubert and Mr. Majault*, think the ancient method of operating by ligature, much more simple, easy, and expeditious, than that in

Foubert
and
Majault.

* Med. Com. vol. iii. p. 61.

use ; and if they refer to the practice of Le Fay, Garengot, or Le Dran, they certainly say true. But we apprehend it is almost impossible to constringe the end of the rectum, without occasioning tenismus, &c. and it is certain the cure by ligature, will take up much longer time than that Mr. Pott recommends. What Celsus says of its being attended with no pain, was probably owing to the rectum not being included in the thread. Whereas Avicenna, and many other writers who passed it through the gut, speak of its occasioning violent pain, spasms, and other bad symptoms ; and of the necessity of loosening it and abating them by emollient applications, occasionally before the business could be pursued. This might be owing to the ligature being made very tight, and may be in some measure avoided by a more gentle compression. Wiseman who seems to have been a timid operator,

Wiseman.

rator, chiefly employed it in the cure of this complaint with success, notwithstanding he often embarrassed his proceedings, with the use of caustics to destroy callus, &c. and in those people who dread an operation by the knife, and who would rather suffer the disease to take its own course, than to undergo cutting; may not the ligature be employed, as the parts divided either way are exactly the same?

I know no other writer who has thrown any light upon the subject, unless Mr. Bell's definition of this disease should be thought an improvement: for, contrary to the general opinion of a fistula being a deep narrow callous ulcer*, or sinus†, he asserts that every sinuous ulcer in the neighbourhood of the rectum, is termed a *fistula in ano*; and that this is the most simple idea that can be given of the disease:

* Celsus, lib. v. cap. 18.

† Paulus, lib. iv. cap. 49.

and it is hard to say whether from the days of Celsus, writers have not often treated of sinuous ulcers about the anus under the name of fistulæ. Astruc very plausibly and ingeniously endeavours to rectify this matter. He informs us “ that
 “ all fistulæ are ranged under the head of
 “ callous and sinuous ulcers. Two things
 “ therefore essentially belong to a fistula,
 “ a sinus without a callus is only a sinu-
 “ ous ulcer. A callus without a sinus
 “ only constitutes a simple callous
 “ ulcer, but neither of them singly a
 “ fistula. But as neither of them sepa-
 “ rately ever constitutes a fistula, so both
 “ of them when joined, always and essen-
 “ tially form this disease.” Our country-
 man Wiseman says, “ sinuous ulcer in
 “ time grow callous, and are then deserv-
 “ edly called fistulæ. Heister * a col-
 “ lector of opinions, says, those ulcers in

* Surgery.

“ or near the anus and rectum, which are
 “ recent, and afford a laudable pus, or
 “ uniform matter, are termed *abscesses* *;
 “ but those which are more inveterate
 “ callous and afford a thin foeted mat-
 “ ter, have been generally denominated
 “ *fistulæ* by the ancients:” and in this
 opinion subsequent authors have agreed.

On the contrary, Hippocrates † did not define a fistula, we must therefore have recourse to the word *Συγίγξ*, *fistulæ*, and it seems from this description, that he meant by the word degenerating, that the abscess in time contracts into a narrow pipe from whence a sanies is discharged: and truly, a tubercle forms a fistula from the very beginning, a narrow pipe being the immediate consequence of

* I have only by me the English translations, and apprehend it does not correspond with the original in this instance, ulcers and abscesses being different things.

* De Fistulis.

a stagnating sharp ichor. He says not a word of *calli*, nor of the remedies to destroy them, and seems to have used detergents only for the purpose of bringing the ulcer into a healing state. Galen uses the words *sinus* and *fistula* synonymously *, and notwithstanding the word *callus* was taken into their definition, because it was sometimes met with in this disease; yet it is plain, neither Celsus nor Paulus considered it as essentially necessary to the forming of a fistula. Celsus says † the cure of a simple recent fistula in the flesh is easy; but when by time it becomes callosus, there is a necessity for stronger medicines, or caustics to consume it. In his section *de ani fistulis*, callosity seems not to make any part of the complaint. Paulus also ‡, speaks of *fistulæ* both with and

* De Art. curand. ad Glan. cap. viii.

† Loc. cit. See Hip. lib. de Coac. pron. No. 3.

‡ Loc. cit.

without

without callosity ; and Heister confesses that a fistula has sometimes no great callosity, only the margin of its entrance a little indurated : and upon the whole, a fistula strictly speaking, seems to be a contracted narrow pipe, discharging a sanies, sometimes with, and sometimes without callosity ; and differs from a sinuous ulcer, in its sides being more contracted, and when it has continued some time, in their being more or less hard.

After all there are only two kinds of sinuous ulcers, or fistulæ, which properly belong to the rectum, and anus ; the one is that betwixt the coats of the gut, as delineated by Cheselden, and the other, that which is said to creep up the outside, of this lower extremity of the intestinal canal. In both cases the gut itself is diseased, but the abscess which arises in, and forms upon the buttock, though it is near to, and extends up to the verge of
the

Fistulæ
properly
belonging
to the
anus.

the anus, yet if it goes no higher, it has nothing to do with the rectum, nor is there any particular operation necessary in the cure.

First sort.

The first may arise from a common inflammation, or from piles being inflamed. If from a common inflammation, the subsequent abscess breaks either on the inside, or outside of the gut, or perhaps both. In the first instance, the matter is discharged *per anum*, or sometimes at the verge of the anus: in the other, by the side of the fundament. But when it arises from inflamed piles, tubercles, (*condylomata*), &c. if an abscess accompanies, it is commonly a small one, and the disease is mostly discovered by a discharge of thin ichor, from a very small orifice in a little excrescence, at the place where the piles usually appear.

Second kind.

The second sort I imagine, always arises from an inflammation, or some disease
in

in the side of the gut, that produces an ichor, and occasions suppuration in the adjoining adipose membrane, which lays the intestine bare, and forms an abscess by descent of matter, a little below the anus. It is owing to the affection being thus circumstanced, that surgeons have found it impossible to heal these sinuses without dividing the diseased parts, and restoring them by bringing on digestion.

Nevertheless the probe more certainly discovers the nature of this complaint, than the symptoms described; for when the sinus runs between the coats of the gut, the end of a strait probe is distinctly felt, by a finger in the anus, immediately under the internal coat of the rectum, all the way it passes. Whereas when the matter comes down by the side of the gut, a curved probe is mostly required. Nor do we feel the end of it so plain, till it gets

How distinguished.

gets some way up. But this is a matter of no great consequence, as the treatment is the same in both cases; though in one instance we only make an incision through the inner coat of the intestine, but in the other both coats are cut through. Nor have I ever found in these instances, any other operation than a single incision necessary to bring about a cure.

Different
opinions
consider-
ed.

We are told however, that we are often to meet with winding, coneyborough sinuses, and that much cutting may be necessary on this account; but it must be remembered, that this doctrine is borrowed from the ancients, who confounded the abscess in the buttock, *in perinaeo*, the lumbar abscess, and that connected with the rectum, together; and whose observations we have seen, were made on the parts below the anus. It was only the lower part of the rectum that they
ever

ever divided, for fear of wounding the sphincter, and it is therefore no way applicable in the present instance.

Indeed a moment's reflection will I think evince, that there can very seldom be more than one sinus : when the matter forms betwixt the coats of the intestine, or when it arises from a disease in the outside of the gut, I believe the matter always comes down close by it, at least in the present case. I have never met with more than one sinus above the verge of the anus, or a cavity that a single incision in a good habit of body did not lay dry. Being unprovided with a proper instrument, I once passed a bent probe, and penetrating the intestine at the end of the sinus, bent it more, and bringing down the lower part of the intestine, divided it with a pair of probe scissars ; but though the patient was very well cured, it was an awkward operation, and
I think

In what instances one sinus only happens.

I think not to be imitated. I many years used the common fyingotomy *probe razor*, with ease and success, but I find the fyingotomy probe knife Mr. Pott adopted more handy, it being readily passed along the sinus, till the blunt point meets the finger introduced into the anus; where, if there is not already an opening, it is forced through the side of the gut with the utmost facility, and being brought down with the end of the finger, does the business in an instant: and it must be well known to those conversant with this operation, that no hæmorrhage follows afterwards. I prefer the application of a mild digestive balsam to dry lint, because it lies easier in the wound, does not occasion any inflammation, and there is no inconvenience from its being removed, whenever the patient may have a stool.

If we open the abscess, the whole may
be

be gone through at the same time ; though if we first suffer the inflammation to subside, in consequence of the matter being discharged, the opening of the gut will be done with more ease to the patient : but, perhaps the thoughts of a second operation, may more than overbalance this act of lenity. It is not necessary to plague the patient with a sponge tent to dilate the orifice, when the abscess has broke of its own accord ; the opening is always sufficient to admit a probe, and the direction of the sinus being known, the probe pointed knife readily finds admittance through the same passage, and completes the business.

Mr. Pott advises the incision to be carried from the verge of the anus, up as high as the top of the hollow, in which the matter was formed ; and under proper restrictions, this advice seems to be right, otherwise it may lead to the pre-

R posteros

posterior practice of cutting as far as we can reach. If I may judge from what I have seen, dividing the sphincter when necessary, is all that is required; for the matter has free room to drain away, the digestion of the wound removes the disease in the gut, the parts collapse, if not hindered by cramming in dressings; and the union which follows from new granulations of flesh, shews the difference betwixt theory and practice, by restoring the sphincter to its proper office.

It is imagined by several, that when abscesses break on the inside of the rectum, there are always some marks on the outside, either thinness, or discolouration of the skin, or an induration under it, which direct where a puncture should be made with a lancet; and then it becomes the same case, as if the matter had pointed outwardly, and this I believe is mostly true: but it is sometimes otherwise, for
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an abscess being formed betwixt the coats of the intestine, sometimes breaks inwardly, and the matter is discharged by the anus, without the parts on the outside of the gut being any way affected. This happened to a patient of mine some years since. There was not the least sort of direction on the outside, where to have made a puncture, though knowing by the touch within the rectum, on which side the abscess was formed, I should have been under no difficulty in this respect, had not nature rendered any operation unnecessary. For by keeping the bowels open, injecting emollient clysters occasionally, giving elicampane root, and putting light dossels of lint moistened well once or twice a day, with a mild digestive, according as he had a stool, the discharge gradually lessened, and the man got well in time.

When the matter indeed is formed in

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the buttock, and reaches up to the anus, or when it drops down into the buttock in considerable quantity from above; various sinuses are not uncommon. It was these Celsus spoke of, and he has been copied from one to another by subsequent writers, without making a proper distinction. I have known them pass under the glutæ muscles, &c. but his directions are fully sufficient in this business; for if from one orifice there shall be several sinuses, that which runs strait must first be opened, and afterwards those which branch from it, must undergo the same treatment; though it is best to wait till the swelling has subsided, and only dilate them if a discharge of matter, &c. makes it necessary. But if a convenient, and sufficiently large opening is made in the first instance, this will not very often be required. Some advise breaking bridles formed by the cellular membrane,

after

after the opening is made, which may be readily enough done by the end of the finger : but if this is omitted, the digestion of the ulcer will soon make the cavity clear, and give room for nature to restore the lost parts.

Large critical abscesses sometimes happen in the lower part of the pelvis, and form almost, or wholly round the rectum.

Large abscesses about the rectum.

It is these in which the end of the gut has by some been injudiciously extirpated, and others have advised to divide the sides of it in the usual manner, to accomplish a cure. But neither of these steps are necessary, for the abscess taking its rise in the cellular membrane, the gut, though it may sometimes be laid bare, is not diseased ; and an opening adequate to the size of the tumor, is mostly sufficient in this depending part of the body. At least it has happened so in every instance, I have met with ; and I see no reason to

How cured.

R 3

expect

expect any other event, when the healing of the sore is not prevented by a foulness in the lower part of the intestine; because muscular fibres in a sound state, though denudated, never retard the cure.

I have never yet been under any necessity of destroying callosities by the knife, or any sort of escharotics; and truly in this instance we have seldom any thing more than the fistula I have described, or, a common sinuous ulcer to deal with. People, I believe always apply for assistance while in this state, at least it has never happened otherwise in my practice, and had *calli* been common in fistulæ about the anus, Hippocrates and Celsus would not have been silent about them. I verily believe after Galen's time, the doctrine belonging to fistulæ in general, were taken into this account; and writers have since copied each other, to shew they preferred book-learning, to that they might have

Callosities seldom exist.

From whence the mistake arises, and their consequences,

have learned from nature; and what is worse, I am convinced the destruction of callosities has been aimed at by knife or caustic, when they did not exist.

But supposing the disease to have been neglected, and a callus formed; cutting through it and applying mild or naturalized digestives is all that is necessary: for *calli* are owing to a stagnation, and thickening of lymph in the small vessels and interstices of the fibres; and by dissolving it, and promoting its discharge, the callus gradually disappears. Every body conversant in practice must know, that enormous callosities which Celsus used to cut off in chronic ulcers of the legs, subside upon the application of emollient penetrating cerates, and mild digestives, as a regular discharge from the ulcer takes place; and they will not I am persuaded be disappointed, who trust to this method, when callosities present themselves

Calli in
what
manner
they may
be cured.

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in

in the instance before us. Nor when the callous parts are divided, so that a discharge may be procured from the lips of the ulcer, do I find it necessary even to scarify with the point of a lancet; though this is the gentlest operation that surgical writers have advised.

Internal
treatment.

Hitherto I have supposed the patient to be no otherways indisposed, than happens in common critical abscesses; and I have seldom in such instances found any other medical assistance necessary, than a mild regular diet, keeping the bowels open, and giving the bark, or the root of *elicampane*. The effect of the former of these remedies is well known, but the latter has not been so much attended to, though I think it is very beneficial in the piles, or in sinuous ulcers about the rectum, when joined with *rhubarb* to keep the bowels open. I do not conceive it acts altogether locally, for I know

know it keeps up a constant and regular state of perspiration, and thus, I apprehend, relieves by making a derivation from the affected part. It is said *elicampne* will bring on a salivation, but this I have never observed. I have known it frequently to amend the appetite, and I have had decisive evidence of its relieving the piles, unattended with a visceral fever, when other remedies in abundance have been tried in vain; but where there is a white tongue, and inward heat, *sal polychrest* or soluble tartar are better assistants.

Nevertheless, this disease may originate in, or be accompanied with a bad habit of body, from various causes, which must be cured by their proper remedies. When it happens in consumptive people, a cure cannot be expected, unless the original complaint is removed; and I am sorry to say, such an event in that disease in
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the habit which brings on a *phthisis pulmonalis*, seldom, or I believe, never takes place: the ulcer about the anus continuing to discharge poor thin matter, from a pale inactive ulcer, as long as the patient lives. But we must not mistake consumptive symptoms for a real consumption, there being not any thing more common than violent nervous coughs, night sweats, a wasting of the body, &c. accompanying the formation of matter about the rectum, which soon go off upon the matter being discharged.

Excre-
scences in
the
rectum.

I have several times known excrescences arise in the rectum, and I have pushed them off as high as I could reach with my finger, with success; but if this be neglected in the beginning, the gut in time is destroyed more or less by a corrosive ichor, and there is no hope of recovery. Abscesses all over the buttock happen in consequence of this very unfortunate malady

lady. I have known the faces accompanied with a very offensive black ichor in abundance, discharged even into the thigh ; but I do not remember an instance in this case, or when the psoas abscess breaks in this part, of a recovery. All the relief I have been able to give my patients, was by enlarging the external opening, and removing those symptoms which arose from acrid, and very offensive matter being lodged : and when sinuous ulcers arise from a cancer in the rectum, the event which happens when this disease cannot be removed will, inevitably take place ; and our thoughts can only be directed to mitigating the sufferings of the patient, as long as he lives.

Obstructions in the urethra often occasion abscesses and sinuous ulcers in the *perinæum* and the adjacent *nates*, just below the anus, which have sometimes been mistaken for *fistulæ in ano* ; and yet after a diffi-

Sometimes followed by an incurable abscess.

Obstructions in the urethra sometimes cause of abscesses about the anus.

a difficulty in making water, for some time, it being discharged drop by drop, or in a thin forked stream, there are commonly little sinuses into the passage through which the urine has escaped, which sufficiently point out the different seats of the two complaints. It is true, the disease in the urethra, is sometimes connected with the rectum, so as to occasion a free communication betwixt these two passages, and an unnatural discharge of part of the fæces; but as the whole mischief originates in the urethra, it is the first object of attention: and after this is become perview, I see no way of making a radical cure, unless by laying open the sinus formed betwixt the urethra and the gut. I once had an opportunity of putting this method in practice, but, upon deliberation, was discouraged by the uncertainty of success; I should however imagine that by making an incision in the side
of

of the urethra somewhat in the manner we cut for the stone, the sinus might be detected, laid open and incised. If this had ever been done with success, I imagine we should have heard of it. If it has been found impracticable, the want of success should not be concealed; and if it remains yet to be tried, I am certain it deserves attention: being convinced there are few men, who would not undergo even a severe operation, to be cured of a most loathsome malady. Perhaps there are not many opportunities of making the experiment; for as far as I can judge, this unfortunate accident very rarely happens, which is a great happiness to mankind.

Abscesses indeed from this cause in the *nates* or *perinæum*, may be opened and treated in the common manner, with some advantage; but rendering the urethra pervious is found to be the only way of obtaining

obtaining a radical cure. If the obstruction is owing to a venereal cause, the opposite remedies take place, though nothing permanent can be done, but by a gradual and steady perseverance in the use of mild bougies, as will hereafter more fully appear. The most troublesome obstructions of this sort, are those which happen in old people; and even those may be mitigated by the same remedy, unless the disease arises from the prostate gland being scirrhus; and then very little relief is to be expected, except from keeping the bowels open and the use of opium.

Abscesses
of the
scrotum.

The scrotum is subject to gangrenous abscess; to a common purulent abscess; to an abscess from the *tunica vaginalis* being inflamed; and to another in the testicles. The first resembles a blown bladder, and will be spoken of in the Treatise of Gangrenes. The second belongs to the cellular membrane, but is not attended

attended with the same kind of tension as other gatherings, though it is often enlarged to a very considerable size; the skin being thickened and spread wide, from its being in this part loose and readily giving way: yet there are not any abscesses, in which a contraction takes place, or that heal sooner after the matter is discharged, whence it is unnecessary to enlarge upon the subject; but the two last sorts now call for attention.

It is generally imagined, that inflammation of the testicles is productive of many severe symptoms, and much danger*, but I am induced, from practice to believe, that this affection has not been properly distinguished, and that there is no part within the scrotum, simply considered, attended with so little pain or inconvenience from inflammation and suppuration as these glands: and the

* See Heister. lib. i. cap. 5. p. 191.

follow-

following cases will describe the symptoms, usual to this complaint under different circumstances.

An abscess was formed in the testicle of a man about thirty years of age from a bruise. When the accident happened, the patient felt a violent obtuse pain, that occasioned a nausea; but by bleeding, warm fomentations, an anodyne, and *suspending* the part, these symptoms presently went off. Afterwards the testicle swelled, the skin became red and rather hot, the *tunica vaginalis* was distended, but not swelled, the cellular membrane seemed no way affected, the tumor appearing to be one smooth solid substance, without any disease intervening between the skin and the coats of this gland. There was an obtuse dull pain, but nothing considerable; the rest of the symptoms were not so acute as in common inflammatory tumors, and the progress towards maturity

tity under a white bread pultice, was rather slow. Therefore when the fluctuation became very evident, the matter was let out through an opening sufficiently large, and a cure followed without any trouble.

Another man had a swelled testicle for more than a year, which being taken for a scirrhus, was suspended and treated accordingly; but the only symptom besides the tumor, which affected the part, was a shooting pain at times. When I first saw him, a deep fluctuation began to be evident; but the swelling being destitute of that hardness which characterizes the complaint for which it had been taken, I advised the application of the *sticticum*, hoping the disease would shew itself with milder appearances than had been apprehended. The progress was however slow, and at the end of a month all the difference I could perceive was,

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that

that the fluid appeared nearer to the skin, but still without inflammation; which induced me to think of letting it out, to be certain about the nature of the complaint; knowing if my fingers had deceived me, and a cancerous ichor was discharged, it would put us upon immediately removing the testicle, while there was every prospect of success from the operation: but I had the pleasure of seeing good pus follow the lancet, and a recovery in consequence.

I had a similar case where the swelling of the testicle had continued several years, supposed to be a scirrhus, and was removed to prevent fatal consequences; but upon dissection, it was found full of good matter, and perfectly corresponded with the chronic purulent abscess in the lymphatic glands of the breasts, of which we have spoken.

We sometimes meet with purulent abscesses

scusses of the testes, which make a different progress, and have not that I know of been noticed. These glands gradually enlarge, perhaps from some deficiency in the office of secretion, with a smooth surface and some kind of induration, but without inflammation or pain till they arrive at the size of a goose or swan's egg; they then sometimes break, without the cellular membrane being thickened, and discharge good matter, like other abscesses. Sometimes they are accompanied with an hydrocele; but the abscess and hydrocele are distinct diseases, and each require their own proper treatment.

A man had one of these tumors in each testicle, which swelled to a large size, but when suspended, without any pain. One of them was accompanied with an hydrocele, the other not. In about three months time they both broke, and discharged a considerable quantity of

good matter, without any alteration in the watry swelling, which was confined to one side of the testicle only. About six ounces of water was drawn from it, and laying the cyst open by a simple incision, a complete cure followed without the abscess or hydrocele interfering with each other.

Another was tapped for an hydrocele, and it was then discovered from an induration, that the testicle was diseased; but before any considerable quantity of water was again collected, an abscess which had not produced either pain or inflammation broke, and good matter being discharged from the body of the testicle, as a probe evinced, the man got well without any trouble: and though a kind of induration remained some time after the ulcer was healed, yet by wearing a soft mild plaster upon the part, it disappeared.

Both

Both testicles in a man about thirty years of age gradually enlarged with pain till each became bigger than a goose's egg ; and at last one of them seemingly by distention and pressure, occasioned a sphacelus at the lower part of the scrotum. The whole disease seemed to be a mild indurated swelling, without any deficiency in the office of these parts ; the sloughs separated under the application of a mild digestive, and the discharge daily lessened the tumor. At the same time, the other testicle grew less under the sticticum, and the patient I am informed is now got well. Whence I think it is evident, that a discharge from the part, before the fluids are extravasated, will always effect a cure ; and for this purpose an issue may be made, by an incision into, or a seton through the body of the testicle, without danger, if an

attempt to remove the stagnating fluids by topical remedies prove abortive.

The sticticum probably reduced the other testicle, by invigorating the nerves, and promoting a brisker circulation. I have already observed, that I have frequently seen it produce the same effect in lymphatic glands under the same predicament in other parts, unattended with inflammation; and I do not know a better application for the purpose. Perhaps vomits may assist dispersion, by promoting absorption; especially if small doses of quicksilver by way of deobstruent, are taken for a week or ten days preparatory to this evacuation.

All the
abscesses
in the testes
flow
in their
progress.

I believe all purulent abscesses, which originate in the body of the testes, are rather slow in their progress; but I have known them quicker in suppurating, than those mentioned. However, in every
very

very one the symptoms were similar to those first described ; and having seen the testicle miserably cut, and torn to pieces, without any appearances but such as happen to common wounds, I have been led to believe, that the inward part of this gland, like the parenchymatous part of the liver, and other lymphatic glands, does not bring on violent, but obtuse pain : and during the time the matter is confined to the inside of the testicle, the symptoms are much milder than in common gatherings. Ever since I made this distinction, I have been able to determine from these symptoms, from the *tunica vaginalis* not being thickened, and the cellular membrane remaining unaffected, when inflammation and abscess were confined to the testicle. Nor is an abscess of the *epididymis* more troublesome, or any particular treatment required in the cure.

Abscess
of the tes-
tis and
tunica
vaginalis
distinct
diseases.

It is the *tunica vaginalis* when inflamed, which brings on the violent symptoms that were formerly supposed to arise from an inflammation of the testes ; and I believe when a tumor resembling a swelling of the testicle is accompanied with a fever and pain in the loins, colic, delirium, &c. it is owing to the nerves in this coat being put into a state of tension : and it is worth observing, that a most violent inflammation of this part, rarely affects the body of the testicle ; for we daily see in gangrenous abscesses of the scrotum, the whole *tunica vaginalis* slough away, without the *tunica albuginea* being at all injured ; and I believe there are no diseases more distinct than those abscesses which happen to this gland, and those which happen to its coverings.

However, the absence of these violent symptoms is no proof that the *tunica vaginalis* is not inflamed ; as is evident in
the

the radical cure for the hydrocele, 'whether by the seton or caustics. For in these instances we are certain of inflammation, and even suppuration taking place; and yet if the scrotum be suspended, and the weight of the testicle not suffered to stretch the spermatic cord, no symptoms of consequence happen; or when they do come on, in the beginning of critical abscesses, before we see the patient, they are mitigated or removed, by keeping the scrotum up against the belly, giving opium, purging anodyne clysters, applying an emollient pultice, and laying the patient in bed on his back, with his knees drawn upwards. Nor when a delirium comes on, does it appear to me to portend that danger, which has generally been imagined; it being only a sympathetic affection of the brain, and I believe will always go off, when a dissolution of the parts principally affected
takes

takes place: and accordingly, we see surgeons have expected the death of patients under such circumstances, for many days together, when an abscess forming put an end to their fears*.

Abscess
in the
scrotum
from the
tunica
vaginalis
being
inflamed.

Now whenever an abscess of the *tunica vaginalis* arises, a suppuration of the adjoining cellular membrane, makes in the end part of the disease. This sometimes happens in what is called the *bernia humoralis* from a gonorrhœa being suddenly suppressed; for this coat (and not the testicle,) together with the cellular membrane, by consent from irritation, become inflamed; and it is well known, if this inflammation be not removed in the beginning, an abscess is not unfrequently the consequence. Before the obstructed fluids are extravasated, this may mostly be accomplished, by renewing the discharge from the urethra. For this purpose the

Under
what state
it may
sometimes
be pre-
vented.

* See Sharp's surgery chap. ix. case 1st. &c.

common

general method of bleeding, giving calomel, Glauber's salt, &c. applying an emollient pultice, and giving opium, is generally successful; though, if a neutralized ointment be employed, the inflammatory symptoms sooner disappear. Mercurial ointment is not necessary, and increase the disease by irritation. Mercurial vomits I know have often done service, but I do not think they are more effectual than vomits of ipecacuanha; and I have frequently known a cure by discussion accomplished, by the application recommended, and small doses of Glauber's salt, taken daily for a week together, dissolved in water. However, if the disorder has made too great a progress before this process is pursued, and suppuration comes on; though the vaginal coat is affected, no peculiar treatment except suspending the scrotum is required. From all which it is evident,
that

that to treat abscesses within the scrotum, with propriety, we must consider inflammation of the testicle, of the *tunica vaginalis*, and of the cellular membrane, distinctly.

Abscess
under the
fascia lata
of the
thigh.

When abscesses are formed under the *fascia lata* of the thigh, it would be hazardous, or at least productive of much mischief, to suffer the matter to be confined, till discharged by an opening made by nature; for not being able to make its way through this membrane, it gradually descends, and forms a tumor quite down to the knee, unless prevented by a timely opening. When neglected, I have been several times obliged to open these tumors the whole length of the outside of the thigh to perfect a cure; but I have stopped their progress, by letting out the matter at a much earlier period. A small swelling appeared, just below the great *trochanter* in a boy's thigh, without inflammation

inflammation or pain; and in eight or ten weeks time increased to the size of a goose's egg. I watched it some time longer, and seeing it daily stretch under the *fascialata* down the thigh, I opened it from one end to the other, and a recovery immediately followed.

An abscess is sometimes formed betwixt the muscles on the under side of the foot, and the bones, which has been readily cured, by making a large incision in a line from the side of the great toe towards the heel, and where this has been omitted, *fistulae* or a tedious cure has been the consequence. But from the foot we must ascend to the hand which has hitherto been omitted

Abscess
under the
foot.

Wiseman agrees with Parey, Hildanus, and other writers, and very justly observes, that "while we endeavour sup-
"puration in the *paronychia maligna*,
"the bone will certainly corrupt: but

Parony-
chia ma-
ligna.

if

“ if we make a deep incision in the be-
“ ginning of the disease, before the hu-
“ mor hath altered the part, a cure will
“ follow ;” which perfectly agrees with
right reason, and daily experience. For
by cutting the ends of the tendons, &c.
we come immediately to the affected part,
ease pain by taking off tension and by re-
moving irritation, frequently prevent the
progress of the disease.

There are some apposite cases in this
writer, which will ever be instructive,
and we shall transcribe some of them as
patterns, and as undeniable evidence in
favor of the practice he advises. “ A
“ gentlewoman (says he) came to my
“ house one night late, complaining ex-
“ ceedingly of a pain in the pulp of one
“ of her forefingers : I looked upon it, and
“ felt it hot, but saw nothing of swel-
“ ling, whereby I could judge it so ill ;
“ though she seemed ready to swoon with
pain,

" pain. I proposed the making an incision
 " into it to the bone, not imagining so
 " fearful a creature, would have permitted
 " it; but she readily assented: whereupon
 " I presently made a puncture deep in
 " the most pained part to the bone, and
 " suffered it to bleed, while I made a
 " dressing of *unguent. basilicum* to ap-
 " ply upon it, with an *emplast e bolo*;
 " which being applied, she complained
 " of the smarting of the wound, but said
 " it was nothing to the pain she felt be-
 " fore. The next day I waited, upon
 " her at her lodging: she had slept well
 " that night in perfect ease. I took off
 " the dressing, and saw the wound ag-
 " glutinated, then dressed it as the night
 " before, and from that time dressed it
 " no more. After the same manner I
 " have freed many in the beginning of
 " the disease." The remainder of his
 " cases are well worth reading, but we shall
 make

make an abstract from another of them, that we may have the whole of his practice, in preventing great suppuration. In the instance cited, relief seems to have been procured by taking off tension by incision; in the following, by promoting a discharge from the affected vessels.— A young man was afflicted with a pain in the pulp of his thumb. After three or four days trial of several applications, it inflamed and swelled; an incision was made to the bone, which bled and gleeted a few drops. The second day after, the wound was opened and undigested. Dressed it with precipitate plaster, and bandage. The third day after, a slough came off, and left the ulcer disposed to digestion. Precipitate and basilicon, and *drapompholygos* were now applied; digestion followed, and he was cured in six or seven days. He supposes, very rationally, that its not healing by agglutination

nation, as the other did, was from the alteration the ichor had begun to make at the bottom of the wound, which he thinks enough to shew the necessity of laying these tumors open in the beginning. I myself, have frequently seen this complaint removed by such practice, and applying a mild digestive, or a neutralized ointment; and I do not remember ever knowing it terminate by suppuration, in which the first joint of the finger did not come away,

It has the epithet *maligna*, to distinguish it from the simple whitflaw, which arises at the root of the nail, betwixt the cuticle and skin, and gives way to any remedy which does not irritate; but this has its seat in the tendon, membrane, or bone, or all of them at the end of the finger, or instead of the cellular membrane, which is secondarily affected, and converted into matter, by the ichor the membranes pro-

Parony-
chia sim-
plex.

T

duce ;

duce; and the ligaments, &c. dissolving, must of course set at liberty the joints they connect together. It is a most painful disorder, from the particular structure of the part, the nerves being violently stretched by membranous distension. The whole hand and arm often share in the torture, by nervous connection; and pain coming on, before any swelling appears, and its shortly being accompanied with an erysipelas, are criterions which distinguish the nature and seat of the disease, which is out of the reach of medicaments. I have tried to remove it at the onset by neutralized applications, without effect. Even brandy which by lessening irritability, often effectually suppresses a simple whitelaw, does not penetrate deep enough in this, unless we follow the practice of Hildanus* by applying it after a wound is made

* Cent. Jo. ob. 97, p. 78. These cases should be read through

through the skin. But seeing the pain, &c. abates by an incision alone; I never have made use of this application, nor does bleeding or purging avail in removing the obstruction, and its consequences. I have even seen a sphacelus prevail, where these evacuations were carried to a great length, notwithstanding hemlock was called in to their assistance; and such folly have I seen in those attached to this medicine, that when the pain ceased from the end of the finger being black, and actually dead; the prescriber attributed the ease the patient enjoyed, to the wonderful power of this coarse narcotic drug!

Where we are not called soon enough to prevent suppuration, the degree of irritability in this complaint often rises to one hundred and twenty or more; but this we have before observed *, is not to be regarded. And to the best of my remem-

* See Pulse Table.

brance, where phytic is necessary, opium, keeping the bowels open, and saline medicines, were perfectly sufficient during the inflammatory state of the disease. A white bread pultice is the best application to bring the abscess to a head; and I have always found, by dressing the putrid tendon with lint dipped in tincture of myrrh, surrounded with a mild digestive, or neutralized ointment; the first joint in time comes away, and the cure is soon followed, by the assistance of dry lint, cerate, and bandage.

*Abscess
in the
fingers.*

Sometimes, instead of fixing upon the end, the inflammation begins upon the tendon, or its sheath, or both, in the middle of the finger; it is exactly the same disease, and requires the same management in the beginning. Otherwise it not only dissolves these parts, but matter is formed in the next joint, which often becomes carious. The matter sometimes

times makes its way into the hand, or even, if not stopped, into the wrist, dissolving the tendons all the way it passes; under which circumstances, free openings must be made, a seton passed* if necessary, under the annular ligament. But dividing it, which I have heard has been attended with very troublesome consequences, from the starting up of the tendons, is not at all necessary; for by dressing in the manner just described, the putrid tendons will in time slough away, and the sooner if no force is used in extracting them. For if they are not loose enough to be removed readily, by pulling we injure the living fibres, and spread and protract the malady. Pultices should be laid aside as soon as the swelling will permit, for by relaxing, they increase putrefaction; drying dressings are therefore preferable. We should not be too hasty in amputating a loose joint

Sinus under the annular ligament how to be treated

* See backward.

in the finger; for if the matter is not suffered to lodge, which should be carefully attended to, the cartilages covering the end of the joint will come away, and a stiff finger be the consequence, if properly assisted with bolsters and bandages. Nor should we forget in the beginning of this complaint, while the tendon is in a state of inflammation, to keep the finger a little bent, to avoid *tension*; which has been known in this case, to bring on horrid symptoms, and even the necessity of cutting the tendon through, to give relief. It is remarkable that many of these abscesses happen at the same time, in the same manner that we see sore eyes, &c. prevail in particular seasons.

The abscess we have been describing, is distinguished, from that which arises betwixt the skin and the tendinous sheath, in the middle of the finger, by exquisite pain, before the parts begin to swell.

Whereas

Whereas the other is a common abscess, and the swelling and the pain commence together. When it becomes ripe, the cuticle covering the part, often forms a bladder full of matter; underneath is an aperture through the skin, which has rather a spongy appearance, but no particular treatment is required in the cure. Some advise us to open these abscesses early, lest the matter should injure the membrane beneath; and when formed, it may be prudent in hard working people, where the skin is almost become callous, to follow this advice; otherwise if the skin of the finger be soft, the matter will sooner make its way outward, than injure the membranes. And I do believe, when we meet with putrid tendons in an abscess in the middle of the finger, the disease originated for the most part in the tendon; because I have so of-

ten seen it in this part, without the tendinous sheath, &c. being injured.

The abscess which sometimes happens under the flexor muscles of the fore-arm, has already been spoken of, and that arising from the aponeurosis of the tendon being pricked in bleeding, will be noticed in wounds of the membranes.

Carbuncle.

The *Anthrax* of the Greeks in one kind of sphacelus*, but the modern carbuncle of which we have already spoken†, being destitute of the symptoms which characterized the disease, must be considered as a species of purulent abscesses that rarely requires any particular treatment; there are some peculiarities in the complaint, but none to which the methods of cure laid down are not applicable; remembering the saying of Wiseman‡, "That the most dangerous symptom

* See Sphacelus † Med. Surg. vol i, p. 320.

‡ Book i. chap. 10.

“ of all is the return of the matter of
“ the carbuncle into the blood again ; ”
and consequently that dissection ought
not to be attempted. It has an Erysipe-
latus kind of appearance, is rather hotter
and harder in the beginning than other
abscesses, owing I apprehend to the slow
dissolution of the cellular membrane,
both which and the skin acquire a hard-
ness in the manner before mentioned *.

Though no part of the body is exempt
from a carbuncle, yet it chiefly shews it-
self on the back and shoulders, about the
hips, &c. and there is one circumstance
which sometimes happens, that I never
observed in other abscesses, the matter be-
ing discharged through apertures in the
skin resembling a sieve ; after which the
skin subsides, and unites with the subja-
cent parts. They more commonly how-
ever require opening, and often freely ;

* Med. Surg. vol. i. p. 320.

that

that the undissolved cellular membrane may get at liberty. I have seen larger abscesses of this kind upon the back than on any other part. A man had one of them which that spread from the top of his shoulders to his hips, and being imperfectly opened, a colliquative fever together with low diet were near destroying him; but upon making incisions, so that neither matter nor air could be confined, and allowing him a fuller diet, with two or three quarts of ale a day, a medium of what he had been used to, he recovered; and the last time I saw him, had regained the corpulency of body he before enjoyed.

Writers have disagreed about the meaning of the term phlegmonoid erysipelas; for Platner *, who calls a simple erysipelas a spurious kind of inflammation, says in his division of these disease, when it is

* *Inst. Chir.* 158.

accom-

accompanied with a true inflammation, it is called *ερυσιπελας φλεγμονώδης*. But writers of more authority in this instance, have said it has a mixture of an erisipelas and what we have called a purulent abscess; for though the word phlegmone, as has already been observed, has truly no other meaning than *inflammation*, yet it has constantly been used, both by the ancients and moderns, to signify an inflammation in the adipose membrane, ending in suppuration. Accordingly, when an erisipelas and an abscess happened in the same part, both at the same time, it was called by a name, compounded of both these affections *. If however we call it an erysipelas with a purulent abscess, or for shortness a purulent erisipelas, we shall employ a more significant term, than that which has

* See Van Sw. Com. sect. 380.

been

been in use. Nevertheless, it must be remembered, that the abscess, and erisipelas, are distinct diseases; and that each has its own manner of terminating †. The erisipelas either by dispersion, superficial ulcers, or mortification; and the abscess by suppuration: though they are so far joined, that the abscess will keep up the erisipelas, till the matter be discharged, and it then subsides. It is only when the erisipelas and tension are violent, that a sphacelus takes place ‡; of which abundance of instances are daily met with in practice and in books, but one will set the whole business in its true light.

A gentleman about thirty years of age, was seized with an erysipelas all over one of his legs, attended with all the symptoms usual to local inflammation; his

† Med. Surg. vol. i. p. 321.

‡ See Sphacelus

physician, and surgeon, employed the remedies usual on such occasions, for eight or ten days, when a sphacelus beginning to appear in several places of the leg, which alarmed them, they desired my assistance. Upon examination, matter was now found to fluctuate, and being let out, and a white bread poultice applied, the skin from one end of the leg to the other separated in sloughs, and a cure followed, while he was taking the bark, and common dressings were applied.

The inflammatory oedema is sometimes, though rarely, accompanied with a purulent abscess; but when this happens, [warm plasters are preferable to emollient cataplasms, and when the matter is let out, the part affected may be treated as before directed. After all, it sometimes happens, purulent abscesses terminate by inspissation, the thinner part of the matter being absorbed; but this is readily

Phlegmonous oedema.

When Purulent abscesses terminate by inspissation, how to be treated.

ly distinguished by the touch, and the part being laid open by incision, and digestives applied, a cure follows of course. All we have at present to say upon this subject, is therefore finished; though some other kind of abscesses, will be taken notice of in their proper place.

ON

ON
GANGRENE,
AND
SPHACELUS.

G A N G R E N E

A N D

S P H A C E L U S

P R E F A C E.

WE are now to proceed to the inflammation which terminates in gangrene and sphacelus; a subject, on which I have treated many years ago *: but that being my first essay, I have the satisfaction, of making such alterations and additions, as time and experience have since dictated. In short, I found it expedient to write a new treatise, and have made use of the old materials in the manner which best suited my present ideas on the subject.

* In 1754.

U CHAP.

P. R. F. A. O. E.

WE are now to proceed to the in-
troduction which terminates in
the general and historical
which I have treated many years ago.
but that being my first effort, I have the
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the manner which best suited my present
views on the subject.

CHAP. V.

ON FORMER OPINIONS.

HILDANUS, in his first chapter *de Gangrena & Sphacelo*, observes, *Bene Cicero omnis inquit, quæ a ratione suscipitur, de aliqua re institutio, debet a definitione proficisci ut intelligatur quid sit id, de quo disputatur: omissa autem definitione, fluctuat tractatio*: we shall therefore draw into a short compass, the different opinions about gangrene and sphacelus, that we may more clearly ascertain the subject.

The utility of definition.

Etymologists have derived the word *Γαγγραινα*, from *Γρω*, *commedo*, or from *Γρανειν* or *Γρανειν*, because they say it is a disease, which eats or consumes the flesh.

The opinion of different Etymologists.

Some derive it from *Γαγγρῆς*, which they translate cancer; others with more reason say it is a primitive in the Greek, and we will therefore see what Hippocrates our first writer says upon the subject.

Gangrene
what, ac-
cording
to Hippo-
crates.

In speaking of the symptoms which follow fractures with contusion of the heel *, he describes a gangrene, when he says, “the parts may become livid, a bloody ichor be discharged, and a gangrene from compression; and this may happen without any other sphacelus.” Consequently it is a stagnation in the juices, and a beginning of putrefaction: for though in this instance, he seems to use the words gangrene and sphacelus synonymously, yet in many other places he says expressly, that the latter is a perfect corruption of the part it affects.

* De Fracturis, sect. xii.

It

It is imagined that Celsus* used the words cancer and gangrene indifferently to express the same disease, but he surely makes a clear distinction betwixt them; for having described a cancer in speaking of the unsuccessful cure of wounds, he subjoins, “and sometimes there follows what the Greeks call *Γαγγραινα*.” But to form a true judgment it must be observed, that the word cancer used by Celsus, is a primitive in the Latin language, and signified according to his account †, one kind of putrid sinuous ulcer;

The words cancer and gangrene not used synonymously by Celsus.

* Lib. v. cap. 26.

† *Interdum vel ex nimia inflammatione, vel ob æstus immodicus, vel ob nimia frigora, vel quia nimis vulnus adstrictum est, vel quia corpus senile, aut mali habitus est, cancer occupat. Id genus a Græcis diductum in species est; nostris vocabilis non est. Omnis autem cancer non solum id corrumpit, quod occupavit; sed etiam serpit: deinde aliis aliisque signis discernitur. Nam modo super inflammationem rubor ulcus ambit,isque cum dolore procedit: *γεωγραμμάς* Græci narrant: modo ulcus nigrum est, quia caro ejus corrupta est,*

His
meaning
of the
word
cancer

ulcer; and I believe it is owing to this matter not being rightly understood, that Foësius, Vander Linden, and Cornarius, have in their editions of Hippocrates, translated the word *gangraina*, sometimes *gangræna*, sometimes *cancer*, *cancrum*, or *carcinoma*; which has occasioned great perplexity among subsequent writers. Whereas Celsus, instead of using these terms synonymously, employs them in different senses. What he meant by gangrene will instantly appear. We have just explained the Latin word *cancer*. The word *cancrum* was used to signify what

idque vehementius; etiam in putrescendo intenditur, ubi vulnus humidum est, & ex nigra ulcere humor pallidus fertur malique odoris est, & caro intus corrupta: interdum etiam nervi ac membranae resolvuntur, specillumque demissum descendit aut in latus, aut deorsum, eoque vitio non nunquam os afficitur: modo oritur ea, quam Græci γαγγραινα appellant. De ulceribus, quæ extrinsecus per vulnera incidunt, curationibusque eorum.

the

the English call the canker, as his 15th cap. in lib. vi. *De cancro oris* proves; and *carcinoma*, what is now called a cancer, for the *καρκινωμα* of Hippocrates. The *carcinoma* of Celsus, and the *cancer* of the moderns, are both the same complaint; and therefore the Latin and English word cancer, have very different significations.

His description of a gangrene seems to comprehend both gangrene and sphacelus; for he says "the flesh is either black
" or livid, but dry and withered, and the
" adjoining skin, is for the most part covered with filled pustules of a blackish colour. The next to that, is either pale or livid, commonly of an æruginous colour, and void of sensation; the skin a little farther off is inflamed, and all these spread at once: the ulcer into the pustulous part, the pustulous to the part that is pale or

And description
of a gangrene.

U 4

" livid,

"livid, the paleness or livor to that
 "which is inflamed, and the inflam-
 "mation proceeds to that which is
 "sound. In the mean time an acute
 "fever comes on and a vehement thirst;
 "some are also delirious, others though
 "they be sensible, stammer and can with
 "great difficulty make their meaning
 "understood; the stomach begins to be
 "affected, and the breath itself acquires a
 "fetid smell: which disorder in the be-
 "ginning admits of a cure, but when it
 "is thoroughly rooted it is incurable, and
 "most of them die with cold sweats."

Galen's
 opinion.

Galen in his book on tumors contra-
 ry to nature, says, "A gangrene is occa-
 "sioned by a scalding blood, accompa-
 "nied with inflammation, that parches
 "as it were the skin; and that it is a
 "corruption of the solid parts of the bo-
 "dy without affecting the bones;" but
 when along with these the bones are cor-
 rupted

rupted, and the whole are insensible, it is a sphacelus. In another place* he observes "It is a mortification not actually formed but approaching; being the intermediate state between the height of inflammation and sphacelus." Which doctrine has been implicitly copied by Paulus, Aetius, and subsequent Greek writers.

The Arabians however added a third distinction: for Avicenna† treats *de esthiomeno*, & *differentia inter gangrenas & aschachilos*: by which it appears that their gangrene and *aschachilos* were the gangrene and sphacelus of Galen, and *esthiomenus* a spreading sphacelus; which appellation has ever since been retained.

The Arabian, account of a gangrene, &c.

Guido treats of gangrene under the name of *esthiomenus*‡, and denies its be-

* De Arte Cur. ad Glan. cap. 9. lib. ii.

† Lib. iv. Fen. 3. Tract. i E. cap. xv.

‡ De Crab, Anthrax & Esthiom.

ing

ing the same disease as the wolf and canker, with which some had confounded it; because the gangrene destroys the member by corrupting and softening, whereas the other corrodes and hardens; which surely is a just distinction.

Vigo's account.

Nevertheless the Greek gamma having been resolved into the letter c in the Latin language, (which upon enquiry I find sometimes happens), Johannes de Vigo* uses the word *cancrena* for *gangrena*, and says it is called *cancrena* because it is like a canker which corrodes and destroys the parts about: and thus by attending to words, instead, like Guido, of attending to the disease itself, he propagated confusion. In other respects he copied from Avicenna and explains the meaning of the Arabian words.†

* Lib. ii. Tract. 10. de Apostom. cap. 16.

† *Ethiomenus*, *ab hoste*, an Arabic word for an enemy; and *menos*, *ardor animi*; *Aschachilos*, *ab asca*, in Arabic corruption; and *chilos*, juice.

Vesalius

Vesalius† treads in the same path; and shews the affinity of the Arabian terms of art with the Greek and Latin languages. He observes, that all the names employed by the Arabians about gangrenes, &c. and those which correspond with them in other languages, mean one and the same disorder. Wherefore he comprehends both gangrene and sphacelus under the word *gangrena*: for he says, "That gangrene is the worst, which corrupts the part it affects; especially when the corruption has wholly taken place; because it admits of no cure, except cutting off." Perhaps he chose to treat of the whole disease under the term gangrene, because he says the word sphacelus amongst the ancients, was of equivocal meaning, for which he gives his reasons; and were we to believe the seventieth aphorism, of

Vesalius.

† Chirug. Mag. lib. v. cap. 13. de Gangrena.

the

the seventh book of Hippocrates * to be a true copy, we must be of the same opinion. But it is so contrary to his general assertion, that we are led to suppose, the word *sphacelus* instead perhaps of the word *inflammation*, has erroneously crept into the text.

Hildanus

† pursues the general Greek line and is more explicit than many of the copiers. He says a gangrene is for the most part superficial, in the skin, muscles, and other soft parts. In a sphacelus not only these but the bones themselves are also affected. In a gangrene the skin is red from the greatness of the inflammation, but in a sphacelus, it is first pale, then livid, and presently black. In a gangrene there is no stench, but in a sphacelus the limb rots and emits a pesti-

* Those afflicted with a sphacelus of the brain, die within three days, but if they outlive this time, they recover.

† Cap. de Gangrena.

ferous

ferous fœtor. If we make an incision in a gangrene, the patient has exquisite feeling, but when it is destitute of sense, it ought to be called a sphacelus.

Fabricius ab Aquapendente * who had examined former writers with great accuracy, looks upon this last, to be the principal distinction, and concludes that gangrene and sphacelus are only different degrees of the same disorder; and by some, they have ever since been used as synonymous terms.

* Lib. i. cap. 19.

C H A P. VI.

ON FORMER PRACTICE,

A prognostic of Hippocrates.

HIPPOCRATES, in his prognostics, says, "a thorough blackness of the feet and fingers, is less fatal than a lividness. Other symptoms however are to be taken into consideration; for if the patient appears to bear his illness with ease, and any other promising signs shew themselves at the same time, there is room to hope the disease will separate, so that the patient may be saved, losing only those parts that have turned black. But if there be any bilious vomiting attended with restlessness, or heaviness of the eyes, or loss of voice, or any unwillingness to speak, or any delirium, they are certain signs of convulsion and death."

Celsus

Celsus tells us, " It is not very difficult to cure a gangrene, if it has not got full possession, but is only beginning, especially in a young person; and easier still if the muscles are sound, or if the tendons are either untouched or but slightly affected, and no large joint laid bare: or there be but little flesh in that part, and consequently not much to putrify; and if the disorder be confined to one place, which chiefly happens in a finger. In such a case the first thing to be done, if the strength will allow, is to let blood, after that to cut through the sound flesh; for whatever is dry by a kind of tension, is uneasy to the contiguous parts.

"While the disorder is spreading, no suppurating medicaments are to be used; and for that reason not so much as a warm bath. Those also which lie heavy, although they keep the dressings together,
" are

Of Celsus, and his method of treating the disease.

“ are foreign to the purpose ; the lightest
“ dressings therefore are required ; and over
“ the parts that are inflamed, coolers should
“ be applied. If the disease is not stopped
“ by these remedies, betwixt the sound and
“ corrupted parts ought to be cauterized.

“ In this case especially, assistance must
“ not be sought for from medicaments
“ alone, but from a due regimen ; for this
“ disease never appears but in a corrupt and
“ vitiated habit. Wherefore in the first
“ place, unless weakness forbid, the patient
“ must live abstemiously. Food and drink
“ must be given that will bind the belly,
“ and consequently the body also ; but these
“ must be of a light nature. Afterwards, if
“ the disorder stops, the same applications
“ must be used as have been prescribed
“ in a putrid ulcer, and then also a fuller
“ diet of the middle class may be allowed :
“ but notwithstanding unless the *primæ viæ*
“ and the whole body are dry, cold rain-

“ water

water should be drank. The bath, unless we are confident of a cure, is hurtful; for the ulcer being softened by that means, is quickly affected again with the same disorder. But sometimes it happens that all these remedies do no service, and notwithstanding all their force the gangrene spreads; in which case the miserable but only method to save the rest of the body is to cut off that limb which is perishing by degrees."

Galen* says, The cure of a gangrene consists in evacuating the blood confined in the diseased limb (because it is the cause of the succeeding mortification), and in promoting sweat. Therefore many deep scarifications are to be made, the blood must be suffered to discharge, and then a cataplasm applied, which resists putrefaction, made of oxymel, vetch-

Galen's
method
of cure.

* De Arte Cur. ad Glan. lib. ii. cap. 9.

meal, or darnel, or bean flour. If stronger remedies were required, salt or troches, then in use were added, making the application stronger or milder according to the state of the patient. Putrid flesh was cut away, and for greater security, its roots connected with the sound parts were cauterized, especially in the pudenda. Afterwards the eschar was digested off by the remedies then in use, such as juice of leeks, honey, &c. and the ulcer being filled with new flesh was cicatrized.

On the other hand, he says, when the affected member is dead, cannot feel when pricked, cut, or burned, it ought immediately to be cut off, that it may not affect the parts which are sound: and this practice passed through the hands of the Greeks without alteration. The Arabians however made some additions to the remedies usually employed; for Avicenna advises to apply a defensative, composed

The Arabian method.

posed of Armenian bole, *terra sigillata*, and vinegar, above the mortified part to prevent the spreading of the disease; and recommends *Egyptiacum*, so much esteemed by subsequent writers for its power in subduing putrefaction in mortified limbs. Afterwards, little or nothing more was done than copying from one to another, till the beginning of this century. No one, either among the ancients or moderns that I can discover, carried into practice what Celsus said about the impropriety of applying suppurative medicaments and warm water; and of the warm bath occasioning a return of the disease in a spreading sphacelus: on the contrary, it has been theorized away by the Baron Van Swieten*; warm fomentations have been in constant use; and I am persuaded have very frequently

A rule of
Celsus
neglect-
ed.

And theo-
rized a-
way.

* Com. in Boerh. sect. 437.

A remark
of Chesel-
den.

Amputa-
tion to stop
gangrene.

Le Dran's
opinion
about it.

increased the progress of the disease. Perhaps this might be one cause why Cheselden * observed, " That he had
" known many mortifications succeed
" well, when left to separate; but few
" that had been otherwise treated; and
" that he had known success, where the
" patients had the happiness to have no
" one about them to interrupt the kind as-
" sistance of nature." Even long after the
period mentioned, amputation to prevent
the spreading of a gangrene was still in
use, notwithstanding Le Dran †, upon
taking a view of the subject, had said " To
" cure a gangrene from an internal cause,
" you must be able to change the ill dis-
" position of the blood in a short time,
" and to invigorate it, but it has been
" hitherto impossible;" and that " am-
" putation in such instances afforded no
" relief."

* Anat. 7 Ed. p. 208.

† Ob. 110. in 1727.

Never-

Nevertheless, there are many cases upon record, where the spreading of *sphaceli* have been stopped by amputation, by the cautery, and by quicksilver dissolved in aqua fortis, &c. all which must have been local complaints: and had their practice been confined to the disease thus circumstanced, success might oftener have warranted their proceedings. But proper distinctions not being made, amputation was indiscriminately performed, and the disease re-appearing, induced surgeons to join Le Dran in opinion that though amputation might be necessary, it never ought to be done till the mortification had stopped, and separation of the dead parts somewhat advanced: especially as Mr. Rushworth of Northampton had now luckily discovered, that Peruvian bark has a power of stopping mortifications, it was imagined that having an inward remedy capable of subduing

Sometimes successful and when.

The reason of its being often unsuccessful.

Which induced surgeons not to amputate till the mortification is stopped; especially as Rushworth had discovered the use of the bark in them.

this malady, the uncertain use of the knife was no longer necessary.

This discovery thought to be a happy event.

The inefficacy of cordials, alexipharmics, &c. in the cure of this complaint when arising from an internal cause, induced the faculty to look upon this discovery as a most happy event; and physicians and surgeons from every quarter testified its power by experiment in cases of this sort which came before them. Heister, who had only heard of what it had done, after speaking of the medicines in common use, says "But if the *cortex Peruvianus* has the effect attributed to it, we need not be troubled with such a train of ineffectual remedies."

Indiscriminately used, and thence near sinking into discredit.

Unfortunately however, like amputation, the bark was indiscriminately used with equal expectation of success; and failing no doubt in many instances, like all other remedies, where unreasonable hopes are entertained, it has been near sinking

sinking into discredit, among those who expected it to be a specific in every species of this disease. A misfortune common to popular remedies, which under a prudent exhibition might have been valuable acquisitions to mankind. There cannot I am persuaded be any doubt of its powerful and advantageous effects in some kind of mortifications; though effects may have been ascribed to it which were owing to nature. In others if too hastily given, it certainly does mischief. In some, no assistance can be expected from it; and the same may be said of opium, of incisions, and fomentations, in gangrened and mortified parts. We shall therefore in the following essay endeavour to point out the times and reasons for their use; in which, as we before observed from Celsus, the principal part of medicine consists. And notwithstanding the words gangrene and sphacelus have by

It has
powerful
effects in
this dis-
order.

But some-
times of
use, some-
times in-
jurious,

The reasons for dividing gangrene and sphacelus.

able writers been used as synonymous terms, and it may sometimes be difficult to draw the line of distinction; yet, as dividing diseases into stages, has always been useful in practice, and because gangrene and sphacelus often require very opposite treatment, we shall divide them into gangrene, sphaceloide gangrene, and sphacelus, and these again into local and spreading. We have found these distinctions sufficient for every medical purpose, without being liable to those mistakes in practice, which formerly must have arisen from the division taken from their causes, external and internal; as the latter is frequently joined to the former, and a local gangrene, &c. as frequently arises from an internal cause.

C H A P.

C H A P. VII.

ON LOCAL GANGRENE.

FROM what has been said, it appears that abscess and gangrene, differ only in degree of violence. In the one the cellular membrane and skin are dissolved by a mild suppuration, in the other by putrefaction; but it is impossible to give a better definition of this disease, than Galen had already given. “ *It is a mortification not actually formed but approaching, being the intermediate state betwixt the height of inflammation and sphacelus.*” For instance, the fine blueinflamed colour sometimes observable in the carbuncle or the blisters which happen in great swellings from accidents, &c. with a lively tense skin, are not gangrenes but the height of inflammation. Where-

The difference of abscess and gangrene.

Definition of gangrene.

as,

A caution

as, when small blisters are accompanied with an inactive or kind of dead state in the fibres, a gangrene is taking place. But we are not to conclude from their insensibility or offensive smell, that they are thoroughly mortified; for from the load of serum, or lymph, the cellular membrane is sometimes enlarged to a most enormous size (even where, as in the hands and feet it possesses but little fat), the limb has the appearance of being dead, and yet when the diseased membranes, &c. come away, the tendons and muscles underneath are left unhurt: and we have the pleasure of seeing it perfectly restored, when perhaps it was thought to be incurable.

Two kinds of gangrene

Writers have spoken but of one kind of gangrene; there are two kinds however to be met with in practice, which require very different treatment from each other: the inflammatory gangrene of Hippocrates,

Hippocrates, and the gangrene arising from, or accompanied with, an *Empirema*. The former we have observed may be occasioned by a stagnation in the juices, and this may arise from injuries or preternatural irritability, accompanied with an acrid state of the fluids, or any other irritating cause.

The swollen parts lose their inflammatory redness, become either livid or pale, an inactivity of the fibres gradually takes place, a load of yellow serum or lymph stagnates in the cellular membrane, blisters from a separation of the cuticle arise, and greenness with putrefaction ensue; but without being preceded by, or accompanied with, any other symptoms than such as are usual to common inflammation*, &c. If it arises from the height of local inflammation, it must at first of course be

Inflam-
matory
Gangrene
described.

When lo-
cal.

* See an instance of this kind in Wiseman, book vi.
chap. 2.

local;

local; it may be local too when it arises from a metastasis † of acrid lymph, in the same manner as a critical abscess become local; for they only differ in a degree of violence. But a gangrene from a crisis, requires somewhat different treatment to that brought on by accident, such as bruises, irritating substances, &c. in very irritable habits.

How
treated.

This is the gangrene in which Celsus bled when the patient's strength would permit; and when it happens in injuries while the inflammation is great, with a strong pulse, his practice may often be imitated with advantage, by lessening the impulse of the blood; but in that arising from a metastasis the lancet should be used with more caution. I have never ventured to direct bleeding in this instance, well knowing the pulse will sink, and debility in a greater or less degree

† See Metastasis, p. 24. ob 1, 2, 3, 7.

come

come on, when acute sensation and tension are abated, by deadness taking place; and that nervous energy, which loss of blood, and consequent absorption of matter tend to destroy, should be preserved as much as possible.

It is also the gangrene in which emollient fomentations applied warm without spirits, or the flannels being wrung out, are proper; because they soften and promotes a circulation in the small vessels. But when swelling, tension, and inflammation, threaten a gangrene; the first step if possible is to abate heat, by innate coolers, and to remove the irritating cause, or lessen the irritability of the part, or both, by the methods before recommended when an abscess possesses too much heat. I have seen remarkable good effects, from thirty drops of laudanum, repeated every ten or twelve hours,

Fomentations
when to
be used.

Laudanum.

Incisions
when to
be made.

hours, in abating inflammation in this instance. But if these methods assisted with fomentations do not succeed, and vesications accompanied with a deadness of the skin make their appearance; the parts, as Galen long since advised, must be unloaded by bold and free incisions made into the cellular membrane. This is the state in which Mr. Freke †, a well known practical surgeon, says “Scarifying the skin in a gangrene is an
“idle practice, unless the surgeon, if he
“has sagacity enough, when the mem-
“brane is not destroyed but only ready
“to suffer, then cuts largely through
“both and thereby lets out the inflam-
“ed juices which distend it and thus
“takes off the tension. By such an act,
“he shews both judgment and resolu-
“tion. Such good treatment continued
“may cure the patient.” Nor can there,

† Art of Heal. p. 214.

under

under these circumstances, be any doubt about the propriety of this practice, because it strikes at the very root of the malady. Afterwards mild digestives should be applied; nor must emolient fomentations or pultices be changed for healing cataplasms, &c. till putrefaction appears. For whatever heats while the inflammation exists, increases the disease; and when necessary, it is better to make the alteration gradually as the disease gains ground, by applying antiseptic pultices, rather of the antiphlogistic kind, such as Galen recommends, composed of oatmeal, vinegar, and oil. If an inactivity in the fibres prevails beyond the parts that were inflamed, a mild application that affords a general warmth will be useful; but, on the contrary, should inflammation in these parts remain, a neutralized soft plaster is preferable.

Other dressings.

At

Internal
medicine
in this
species of
gangrene.

At the time these applications are first employed, before signs of approaching putrefaction appear, I have found purging with salts, &c. useful. The bowels are all along to be kept open, saline medicines given, and when the disease arises from a metastasis of matter, I prefer Mindererus's spirit on account of its promoting sweat. The diet should always correspond with the medical intention; and by these means we frequently prevent a gangrene degenerating into a sphacelus, the cellular membrane separating commonly in rags, and the whole afterwards going on in its regular course.

Bark
when
proper.

Now though the bark is improper while the inflammation exists; yet when the tension is abated, the pulse sinks, signs of debility begin to shew themselves, and a free discharge and separation commences, it seems to be serviceable in preserving strength, and in promoting
the

the remainder of the business. The principal signs of a gangrene being local are, the muscles, &c. appearing sound under the cellular membrane, and the feverish symptoms disappearing with an amendment of the patient's health soon after the inflammation subsides. If this be true, how improper are the rules laid down by those, who not making a distinction betwixt gangrene and sphacelus, advise us to raise inflammation to stop a gangrene. A separation never takes place till the inflammation is subdued †; for the livor extends into the inflamed parts, and the inflamed parts into those which are sound. Nor is the red circle which encompasses mortified parts any argument in their favour; for though it is a pretty certain criterion of the disease being stopped, yet being perfectly confined, and destitute both of heat and

† See Celsus.

pain, it cannot be called an inflammation, but a symptom of life returning into the affected part.

Gangrene
from an
incom-
plete cri-
sis.

However, though acrid matter in a diseased habit of body, by stagnating in the cellular membrane, brings on a critical gangrene; yet there is sometimes an incomplete crisis only, a morbid disposition of the circulating juices still remaining, and instead of relief, the body is more violently affected by absorption, by nervous irritation, and by a sedative power in the fluids acting upon the nerves.

A man of fifty years of age, of a gross habit of body, from an inactive and irregular life, after being frequently afflicted with the rheumatism, had an ulcer upon his leg for the space of two or three years; in all which time he enjoyed a better state of health than usual: but the ulcer being healed, his rheumatism got worse, and at the end of something more than

than a year he was seized with a feverish indisposition, which occasioned his having but very little sleep; and in this state he continued more than a week, when his fever increased and confined him to his bed without rest.

These symptoms increasing for four or five days, an inflammation about the size of a crown-piece appeared near the ankle in the leg which had been diseased. Upon this a white bread pultice was applied; and as he was now weak and low, anodyne cordials were given; but the family finding the inflammation increase, and he visibly worse, on the twenty-eighth of November, near three weeks from his first seizure, and about three days from the beginning of the inflammation, I was desired to see him.

I found the poor man extremely weak indeed, and delirious. His pulse very weak, fluttering, and low; his looks quite

wild ; he was very hot ; his tongue dry ; faltered in his speech ; he had a violent tremor all over him, with a twitching of the tendons and picking of the bed-cloaths, and his faces came away involuntarily. Upon removing the pultice, I found all round his ankle and the top of his foot invaded by a gangrene that was advancing near to the calf of his leg : upon which I gave him two scruples of bark every two hours, in strong and small cinnamon-water, mixed ; large openings were made through the *membrana adiposa*, which was quite sphacelated, and the muscles underneath appeared in the same state : but upon making an incision a little way into them, some poor thin blood was discharged. Fomentations, digestives, and the *Theriaca Londinensis* (in use in those days) were applied ; and from this time he began to amend : all the bad symptoms gradually left him ;
and

and on the third day a red circle, the forerunner of victory, encompassed the gangrened part, which now began to be flabby.

Next day I was informed he had passed a good night; he was become sensible; his urine let fall a sediment; his pulse was both fuller and stronger; his tongue moister; a separation of the gangrened parts began to take place, and digestion appeared; and these symptoms improving, on the fifth day the bark began to be given every four or five hours only for ten days longer; in which time two abscesses were opened in the calf of his leg which discharged a pint and a half of matter; and from this time we had no difficulty in the cure.

Since this case happened, I have met with many instances of the same sort; but I do not remember any one among them where mortification and death were

so near at hand without one or both happening. I apprehend it shews the utmost extent of a gangrene without changing its name, at the same time that it illustrates the doctrine just advanced: and as a sphacelus is very often an original disease, unpreceded by a gangrene, we will copy a well known instance of a sphaceloide gangrene which seems to have differed only from this just mentioned in degree of violence. For though it was called a sphacelus, the abscess which happened is evidence of the cellular membrane not being dead, and consequently the affection partook of both diseases.

Sphace-
loide gan-
grene,
what.

“ A man, near fifty years of age, had
“ a mortification without any manifest
“ external cause, seated in the middle
“ of the back of the foot, or instep
“ near the toes. After eight days trial
“ with deep scarifications, warm fo-
mentation,

“mentations, cataplasms, and cautery,
“&c. and cordials internally, to no pur-
“pose; the sphacelus spread through
“the whole foot, and had begun to af-
“fect the *tendo Achillis*, at which time
“the physician and surgeons expected the
“death of the patient to be unavoidable.
“They entertained no hopes from am-
“putating the part, because there was a
“violent fever attending; his tongue was
“rough and dry, his looks wild, with thirst,
“restlessness, &c. and he complained
“of a pain and hardness in the side of
“his belly: so that it was unanimously
“agreed in this desperate case to try the
“Jesuits bark. Half a drachm of it was
“given every four hours to the patient,
“and the next morning every thing ap-
“peared to be altered for the better, even
“though the first dose was given but the
“evening before; for the fever and other
“symptoms were mitigated, and the pa-

“tient rested quietly in the night, nor had
“the mortification made any advance.

“The next day a kind of moisture was
“discharged from the affected part; and
“on the third day after giving the bark,
“there appeared two large abscesses at
“the ancles, from whence it was evident,
“that there was no longer any danger of
“the mortification ascending higher.
“The bark was now given every six
“hours in the same dose, upon which a
“slight fever returned, nor was the ap-
“pearance of the matter so laudable;
“therefore it was again exhibited every
“four hours as at first, and thus conti-
“nued for the space of twenty-eight days.
“After that, half a drachm of the bark
“was given every sixth hour again, for five
“or six days longer; and during the
“whole time of the cure, the patient
“took ten ounces of the bark.

“All the muscles and tendons of the
foot,

“ foot, which were already putrefied by
 “ a perfect mortification, before the bark
 “ was given, were gradually separated or
 “ cast off; but the bones of the toes,
 “ *metatarsus*, and *tarsus*, were laid bare
 “ and cut off by degrees as they became
 “ corrupted.

“ The whole cure was completed in
 “ about seven months, so that the pa-
 “ tient could walk with a wooden leg;
 “ and afterwards acquired a good state of
 “ health *;” and as these effects are com-
 mon to the bark in similar instances, I
 think they proved what Sir John Pringle†
 asserts, “ That in gangrenes, where the
 “ vessels are relaxed, the blood dissolved
 “ or disposed to putrefaction, either from
 “ a bad habit, or the absorption of pu-
 “ trid matter, the bark is a specific.”

Bark,
when a
specific.

* See Philos. Transf. No. 426. or Van Swiet. Com.
on Boer. Aph. v. iv. p. 104.

† Ob. p. 336.

Some of
its effects.

In these, and other instances we might mention, the bark seems to have supported nervous energy, to have corrected an ill state of the juices, and to have enabled nature to expel the *materia morbi* from the blood; because the delirium disappeared, the pulse was raised, a red circle encompassed the gangrened parts, the disease was stopped, and abscesses near to the putrid parts followed its being taken. These abscesses have always been esteemed indications of safety; and it is reasonable to conclude upon a complete crisis being thus obtained, the patient will recover if he has strength enough to support the discharge.

Emphyse-
matous
gangrene.

The other kind of this disorder is also sometimes local, and is accompanied with a gangrenous *emphysema*, which is the characteristic of the disease, and discovers the tragedy that is acting under the skin before it is apparently affected;
the

the flesh being perfectly sensible to every impression, and discharging blood freely upon incisions being made. It is hard to discover the state of the fluids which produce this affection, though the cellular membrane is destroyed and becomes putrid almost at the onset of the disease: probably they are highly active and possess great acrimony; and perhaps some kind of fermentation may arise upon their being extravasated. All we know with certainty is, that immediately upon their stagnating, air-bubbles are formed, and a flatulent swelling and putrefaction are the consequences. It must however be observed, that this differs very much from the *emphysema* attending fractured ribs, &c. in which the fluids are generally free from acrimony; and we have therefore joined the epithet gangrenous to distinguish one from the other.

No

Scrotum
a com-
mon seat
of this
disease.

No part of the body is more subject to this disorder than the *scrotum*; sometimes in consequence of urine having made its way into the cellular membrane, through openings consequent of strictures in the urethra; and sometimes in consequence of inflammation brought on by a metastasis of matter, &c. It is easy to conceive how a disease of this kind may happen from urine lodging in the cells and becoming very active by heat and stagnation; or when it happens from a metastasis, I think with Hildanus * “it may be owing to the moisture and laxity of the part, and being near to several emunctories” that secrete excrementitious fluids, which, by a tardy passage, acquire acrimony. The *scrotum* is one of those parts of the body which soonest putrify when deprived of life;

* Cent. 5. ob. 77. p. 468.

a gangrenous

a gangrenous emphysema soon shewing itself there in dead bodies: and whether the reasons just assigned for its happening be true or false, I think we may hence conclude, that there is a local cause in the *scrotum* for the gangrene of which we are speaking.

This kind of gangrene, when local, is confined to the cellular membrane immediately under the skin; nor do the parts underneath loose their natural colour, or are they distended with wind for some time; and the blood in them also retains its usual colour and fluidity during the progress of the disease. But of all others, that which arises from urine escaping into the cellular membrane of the *scrotum*, in a good habit of body, is most certainly in this predicament, and claims our first notice on account of its simplicity: as it teaches, if we can remove the irritating cause together with the gangrenous
air,

The parts
it affects
when lo-
cal.

air, we put an end to the progress of the complaint; because when the urine and wind are discharged by a large incision, we readily cure the ulcer by mild antiseptic cataplasms, digestives, &c.

There is no material difference between this and the emphysematous gangrene arising from a complete *metastasis* of matter in the *scrotum*; for as soon as it begins to resemble a blown bladder, the business is to make a large incision to let out the confined air. For by waiting for suppuration, which can seldom or never happen, we suffer the putrefaction to increase and give the gangrenous ichor an opportunity of spreading along the cellular membrane. Whereas when the air is set at liberty and digestive balsams, &c. applied, we stop the progress of the disease*. However, when the *metasta-*

* Does not the success of this practice confirm our opinion about the effects of letting out confined air in abscesses?

sis is complete, more must be done to recover the patient ; and after taking some notice of the attendant symptoms, we shall be more particular about the external and internal treatment that may be necessary.

When this kind of gangrene is perfectly local, it seldom, if properly treated, occasions any other kind of fever than such as is common to local inflammation ; but when the crisis is incomplete, like the partial crisis we have already spoken of in the inflammatory gangrene, the fever increases with delirium, tremor, a quick, weak, fluttering pulse, a wildness in the looks, and other desperate symptoms that will be described in the cases we shall re-

Symptoms.

abscesses? For the only difference is, that gangrenous air produces more violent effects than atmospheric air, which enters *ab extra*, and becomes more active from being confined in the cavity of a common gathering.

late :

late : wherefore no time is to be lost in the pursuit of active measures to stop the disease.

How to
be treat-
ed.

For this purpose incisions are to be made into the *ferotum*, not only to discharge gangrenous air, but that antiseptic dressings may be applied suited to the state of inflammation. If considerable, they should be incapable of increasing it, and therefore spirit of sea-salt in water, which is a cooling antiseptic and seems to have a property of correcting the acrimony by which air-bubbles are raised, should be applied ; nor can we in this place omit making a short abstract of the notable instance in the Baron Van Swieten's Commentaries, which extended this practice.

“ A man, forty years of age, of a robust and healthy constitution, after
“ a slight strangury, and taking terebin-
“ thinated balsam of sulphur, felt a pain
in

“ in the perinæum, and a surprizing tre-
“ mor both in the *scrotum* and *penis*.
“ An emollient fomentation was applied
“ outwardly ; he was let blood and took
“ some cooling purges, &c. but with-
“ out any great advantage, for he could
“ only make a few drops of very foetid
“ water with great difficulty. On the
“ seventh day the *scrotum* was swelled to
“ a monstrous size, as also one side of
“ the spongy substance of the *penis*.
“ The next day the *scrotum* being gangre-
“ ned, burst and discharged a bloody sanies ;
“ and one side of the *penis* seemed to be
“ affected with the same disorder. Up-
“ on this, antiseptic fomentations and ca-
“ taplasms were applied. Scarifications
“ were made ; and as the putrefaction was
“ terrible, spirit of sea-salt, diluted with
“ six times the quantity of water, was
“ applied to the gangrened parts, which
“ prevented the mischief from spreading
Z farther

“ farther. Afterwards more deep scari-
“ fications were made, and the parts being
“ covered with linen cloth dipped in the
“ same mixture, &c. the gangrene was
“ perfectly subdued, and a separation of
“ the dead parts which extended to the
“ groin, followed.”

Indeed, if we may form any judgment about the effects of this remedy from the stopping of the gangrene after the gangrenous air is discharged, it has the appearance of doing good service: but when the gangrene is stopped, the putrid sloughs will come away more readily under the use of a mild digestive balsam, with as much decoction of myrrh beat into it as it will conveniently take. For whether these dressings mix with the matter in the sore or not, if they are of a proper consistence, they drain upon and unite with the solid parts, and defend them from the effects of acrimony. The external

ternal parts may be covered with the cataplasm composed of oil, vinegar, and oatmeal, made by boiling the oil and vinegar together, and then stirring in as much oatmeal as will give it a proper consistence; which is a good antiseptic, and by promoting perspiration commonly produces the effects we desire.

But where the inflammation is overcome by a mortification taking place, spirituous antiseptics joined with the balsams, or used as lotions, are more powerful assistants. To the inflamed parts surrounding the gangrene, a cooling defensive may be applied; but to those which are become putrid, the stale beer pultice, with the addition of powdered chamomile flowers, wormwood, or other warm antiseptics, according to the degree of putrefaction, is preferable. But I do not approve of the practice, in this instance, of fomenting with hot stupes, however me-

Hot fo-
menta-
tion, &
their ef-
fects.

licated, before the air is set at liberty ; nor even then, otherwise than the application of flannels wet in an antiseptic decoction made warm, to wash off offensive matter. Because we have undeniable evidence that they accelerate the absorption of putrid matter, and also disperse it into the neighbouring parts, and probably rarify and render more active the gangrenous air. We shall hereafter shew, by plain facts, that hot fomentations increase putrefaction in putrid ulcers. And should we employ an hazardous remedy where increasing the circulation is not the point in view ? I have never used them for several years in a gangrene attended with an *emphysema*, except by way of lotion ; and as far as I can judge, I have succeeded more expeditiously and safely without their assistance.

Regarding the internal treatment, it must

must be observed, that the state of inflammation, and the symptoms attending it, should not induce us to use the lancet after the *emphysema* begins to appear: for though it may abate heat, yet the circulation in this appendage being naturally weak and slow, by abating the action of the heart and rendering it incapable of forcing the blood through the small vessels, it aggravates the complaint. Mr. Douglas* has given us a case where six ounces of blood only, taken from a man of a full habit of body with a quick full hard pulse, brought on a mortification the size of a crown piece in an inflammation of the *scrotum*, after the operation of the hydrocele, where no emphysema appeared. The pulse sunk amazingly after the bleeding; the swelling of the affected part increased; and he ventures to affirm that if the patient had

* On Hydrocele 149.

lost twelve or sixteen ounces of blood, the whole *scrotum* would in all probability have mortified, and the event have proved fatal. Nor is this the only case he relates where bleeding seems to have had a similar effect *.

“ On Thursday, a gentleman between
 “ thirty and forty years of age had, it was
 “ thought, a swelling of his testicles from
 “ a gonorrhœa being suppressed; and
 “ going as usual into company, and in-
 “ dulging himself, the swelling was
 “ much increased and attended with
 “ weight and great pain. They seemed
 “ to be not only much enlarged but also
 “ inflamed; the substance of the *scrotum*
 “ had acquired a uniform globular ap-
 “ pearance and was equal in size to a
 “ large sheep’s bladder blown. The pain
 “ was not solely confined to the *scrotum*
 “ but seemed to follow the direction of

* Case 8th. p. 210.

“ the

“ the spermatic chord, and gave him a
“ good deal of uneasiness in his loins. His
“ pulse was quick, but neither full nor
“ hard; his thirst was considerable and
“ attended with universal heat.
“ It was recommended to him to lose
“ twelve ounces of blood immediately, to
“ take a cooling purge, to lie in bed, and
“ to make use of the *fotus communis*,
“ morning and evening, covering the
“ scrotum afterwards with a cataplasm
“ of bread, milk, and oil; to keep the
“ parts suspended with a bag-truss, and
“ to drink plentifully of barley water,
“ and such small diluting liquors, as also
“ to be sparing in his diet, and to con-
“ fine himself to water gruel, panada or
“ some such food. On Friday morning
“ his feverish symptoms were much a-
“ bated, though he had passed the night
“ but indifferently, the pain being con-
“ stant and very great. The tension and
“ swelling

“ swelling were not lessened, but, on the
“ contrary, increased ; for the spermatic
“ chord was observed to be more enlarg-
“ ed, and much harder. He was or-
“ dered to be bleed again immediately ; to
“ continue diluting plentifully, and to
“ take a scruple of nitre every four hours
“ in a draught of barley water, or some
“ other small liquor ; also the *fotus* and
“ cataplasim to be repeated. He com-
“ plained to-day likewise, of a tickling
“ cough, which he said increased the
“ pain in the scrotum very much ; for
“ this he was directed to take half a
“ scruple of the soap pill, at night.

“ On Saturday it was found he had
“ passed the night much better, but still
“ his pain was very considerable, with
“ the swelling and tension not at all abat-
“ ed. In one part there was an evident
“ fluctuation of matter, which pointed
“ outwards ; all thoughts therefore of
“ resolving

“ resolving the tumor were laid aside at
“ present, and maturation was encouraged
“ by substituting the *cataplasma maturans*
“ in the place of the former. The pa-
“ tient was directed also to take his soap
“ pills at night.

“ On Sunday the fluctuation of matter
“ was very manifest, though the quantity
“ seemed to be but small; in order there-
“ fore to evacuate the matter, and to set
“ the parts somewhat at liberty, an open-
“ ing was made by an expert surgeon, and
“ a small quantity of very foetid matter
“ was discharged. The pain was not in the
“ least relieved by this operation; the
“ swelling was not diminished, nor was
“ it any softer to the touch; but in a
“ few hours all the symptoms became
“ worse, and the tension was extended
“ to the abdominal muscles.

“ On Monday morning the wound
“ (ulcer)

“ (ulcer) was covered with a slough at
“ the bottom, the edges looked crude,
“ and the smell was extremely offensive;
“ the colour of the part was changed
“ from a florid hue to a deep red; the
“ pulse intermitted very frequently, and
“ here and there upon the abdomen were
“ small vesications. After this, though
“ deep scarifications were made, warm
“ digestives, antiseptic fomentations,
“ with *spt. vini camphor*: and the *cata-*
“ *plasma e cymeno* applied; he died in
“ the evening,

“ Upon opening the scrotum, matter
“ was found diffused through its cellular
“ substance, as well as through the tegu-
“ ments of the abdomen, in small quan-
“ tity, little more than was sufficient to
“ stain the knife, of a most offensive
“ smell. Each testicle in its *tunica va-*
“ *ginalis*, appeared to be very consider-
“ ably enlarged, as also the spermatic
“ chord

“ chord; but upon cutting through the
“ *tunica vaginalis*, the testicle and *epididi-*
“ *mus* were found in a perfect sound state,
“ not the least enlarged in their size, nor
“ discoloured, or at all diseased: the
“ whole bulk of the part was made up of
“ the substance of the *scrotum*, and the
“ *tunica vaginalis*, which was two-thirds
“ of an inch thick, and extended to the
“ spermatic chord as far as the rings of
“ the abdominal muscles. There was
“ no matter between the *tunica albuginea*
“ and *tunica vaginalis*, nor in short any
“ where else, excepting the quantity
“ mentioned above, diffused through the
“ cellular membrane: and though it is a
“ generally received opinion, that a *hernia*
“ *humoralis* is a disease of the testicle it-
“ self, yet in this instance the *tunica va-*
“ *ginalis* and not the body of the testicle
“ was the seat of the complaint.” And
do not we find it always so in the se-
paration

paration of the parts by the disease of which we are speaking?

We should be cautious therefore in suffering the strength of the patient to be lessened, either by diet or medicines, after the *emphysema* has begun to appear; nor should any applications be used that may promote the absorption of matter. The fever arising from local inflammation will be removed by topical remedies, and immediately making a large incision into the inflamed parts. Keeping the bowels open, and giving saline draughts, with small doses of opium where increased irritability requires it, will be sufficient, while the fever makes them necessary; drinking spirit of nitre-punch, &c. for common drink. But as soon as the pulse begins to sink from the inflammation being abated, the bark should be given either joined with these remedies, with spirit of salt, sweet spirit of vitriol,
by

by itself, or with wine, as the degree of heat, putrefaction, and strength may require.

By this treatment I have repeatedly seen a happy issue of the disease in question; and though it not unfrequently happens that the testicles are left quite bare for a time, yet they are again covered with a new skin from the neighbouring parts; even in those desperate cases where from the great loss of substance one would at first imagine it could not possibly happen: with which every man conversant in business must be well acquainted. But we will illustrate what we have been saying by some cases.

A man, aged fifty-six, of a very gross habit of body from hard drinking and an inactive life, on February 24th, 1752, complained of a violent pain in his head; his tongue was dry, and his body hot and costive, with a quick and weak pulse;
wherefore

wherefore I gave him a gentle purge which procured two stools, and afterwards a saline julep with barley water; yet his fever rather increased, and appearing to be of the slow nervous kind, some *pulvis contriyervæ compositus* was added to these remedies.

On the 28th I found the *scrotum* prodigiously swelled without any very great degree of inflammation. I observed a particular wildness in his looks, which made me apprehensive of a gangrene; and notwithstanding the part was fomented and covered with the *Tberiaca Londinensis*, the *scrotum* next day was enlarged to the size of a child's head, about three years of age, and the penis in proportion. Upon deep incisions being made, an amazing quantity of wind was discharged. All the integuments down to the *tunica albuginea* were entirely mortified; the testicles and their vessels only

only remaining free from putrefaction. He had now a weak fluttering pulse, a universal restlessness, his *facies* came away involuntarily, and he was delirious. He was dressed with digestive balsam added to the other applications, and this day at eight in the morning he began to take two scruples of bark every three hours.

Next morning (29th) at ten o'clock, the mortification had made but little progress, though the rest of the symptoms, except the wild looks, continued much the same; but the day following a red circle encompassed the mortified parts, he had got some rest, to which he was a stranger, and his pulse was considerably raised. The dead began to separate from the living parts in a short time, accompanied with digestion. He became quite sensible, an abscess appeared near the rings of the abdominal muscles, which was opened and discharged good matter

matter ; and afterwards another abscess formed in *perinæo* and round the rectum, containing more than a pint of pus ; but it being let out we met with no other interruption to the cure ; and so much skin was preserved, as covered the testicles. He took about seven ounces of bark in the whole, which I apprehend assisted the suppuration ; and he enjoyed a good state of health many years during the remainder of his life.

A gentleman, about fifty years of age, who had suffered from a stricture in the urethra some years before, though no ways intemperate, had after two or three days illness a metastasis of matter into the *scrotum* ; a gangrenous *emphysema* followed ; and the symptoms of a gangrene beginning to appear, my assistance was desired. I found him in a fever, with a quick weak pulse ; his bowels had been opened, and I immediately ordered a free incision

incision to be made into the affected part: a large quantity of air was discharged, and we found all the membranes in the inside of the *scrotum* putrefied. Antiseptic digestives were applied, and the whole *scrotum* was covered with a cataplasm of oatmeal, vinegar and oil. Cooling antiseptic draughts with laudanum, were ordered this evening, and next morning finding the heat abated, he began the bark; and by continuing the same dressings twice a day, recovered: a great part of the *scrotum* sloughed away; the testicles were left bare, but their covering was restored, with a new skin. Since this I have seen several similar instances*, but it would be useless to describe them, because they all (except one in a worn out constitution) terminated under the same kind of treatment in the same manner. This ac-

* See Hildan. cent. 5. ob. 76 & 77. and Van Sweit. sect. 432.

count materially differs from that given by Hildanus *, who owns that of an almost infinite number of persons whom he had seen with a gangrene of the *scrotum*, he never knew one recover ; so that he stood amazed at a cure of this kind communicated by Holzemius, as a prodigy in the art, declaring that neither himself nor any other physician in his days saw or heard of the like. I can no way assign a reason for such a declaration, unless we suppose it owing to a treatment different from that used by the moderns ; and it is worthy of remark, that in cases referred to by these writers, fomentations seem to have been omitted and the affected parts spontaneously separated under antiseptic cataplasms alone.

Not always confined to the *scrotum*.

This kind of local gangrene is not wholly confined to the *scrotum* ; for we meet with it, though very rarely, in the

* Ib. See also Vander Wiel, cent. prim. ob. 85.

extremities

extremities after accidents : the stagnating fluids, whether blood or lymph, generating air which spreads itself slowly, and in no great quantity, to some distance through the cellular membrane. I formerly gave an instance of this kind, where I thought the patient was cured by bark and nitre, after incisions were made and digestives applied ; but I have since learned, that incisions and topical applications alone stopped the progress of this disease, and I only give the bark afterwards to finish the cure.

At that time, I thought these to be spreading gangrenes ; but I am persuaded, where the *emphysema* does not affect the muscles in the manner we shall describe, that they are local ; because they are almost certainly cured, if the habit be any thing tolerable. In the limbs I apply an anodyne defensive above the inflamed parts, which commonly brings on per-

A curious
instance of
nervous
affection.

spiration ; but in other respects I treat them like a local gangrene of the *scrotum*. The wild look which sometimes happens in this instance, is not any argument in favour of their not being local ; for it may be observed that it is sometimes present in local gangrenes, and absent in those which are spreading ; and *vice versa*, owing probably to the state of the nerves. I therefore look upon this to be a curious instance of nervous affection in particular habits ; for the approach of death, in the diseased part, seems to communicate horror to the whole body, because it disappears as soon as the local complaint is relieved. In these instances, I have long preferred common saline draughts, spirit of nitre, sweet spirit of vitriol, and spirit of salt, to nitre ; because it is apt to disagree with the stomach : and though they may not cool equal to nitre, yet they are more powerful

powerful antiseptics, and sufficient coolers, till the inflammation and fever permit a junction with the bark.

It is said, gangrenes in armies and northern countries often arise from the penetration of frosty particles; and to prevent its degenerating into a *sphacelus*, we are directed to apply snow or cold water; and, if authority is to be depended upon, they will commonly be sufficient for the purpose. Whereas we are told, the immediate application of heat quickens the progress of putrefaction, and ought to be avoided. This subject is discussed in the 454th and following sections of the Baron Van Swieten's Commentary, to which I refer; not having sufficient experience myself to determine whether this method of treatment will prevent a mortification from frost, &c. taking place. In the gangrenes I have met with of this sort, the hand, for instance, is exces-

Gangrene
from frost.

R

sively cold, and violently swelled; and the skin and cellular membrane, are loaded with serum, or lymph: but it commonly gives way to a mild stale beer, or vinegar pultice; though sometimes scarifications are necessary to unload the part. Hence we may learn what is meant by a local gangrene, and how it ought to be treated. Saying more upon the subject would be superfluous.

C H A P.

C H A P. VIII.

ON SPREADING GANGRENES.

THE gangrene which arises simply from inflammation, and a consequent stagnation of the juices, whether from an injury or a metastasis of matter, sometimes degenerates into a *sphacelus*, and affecting the whole body destroys the patient; but as it ceases to be a gangrene before it makes this progress, it must be treated of in another chapter.

The spreading gangrene, of which we now mean to speak, is that accompanied with a gangrenous *emphysema*; and seems Cause. to arise principally from a gangrenous disposition in the juices, or, as Wiseman expresses it, from the degeneration of humours in unsound bodies. Because inflammation accompanied with a mildness in

in the fluids almost under any state of irritability, either disperses or occasions suppuration. I think I have seen it oftener in accidents than in inflammation from other causes ; but I have also seen it come on from a putrid disposition in the juices, the remnant of a putrid fever.

Seat.

When it is the consequence of injuries, the lymph which stagnates about the injured part immediately inflames and corrodes the vessels which contain it ; and then air-bubbles in the *membrana adiposa*, and other membranes, are instantly formed : which air-bubbles, by increasing the inflammation, are increased themselves, and extended immediately, upon the smallest degree of obstruction taking place, all over the limb, and from thence through the whole body. They are not confined to the external cellular membrane immediately under the skin, as in a
local

local gangrene ; but they even pervade it in the most minute muscular fibres, and thus produce a general gangrenous *emphysema*. A fever during this state frequently comes on, accompanied with a delirium, great dejection of spirits, and often a particular wildness in the looks ; the pulse is either quick, low, weak and fluttering ; or quick, unequal, and hard. The degree of preternatural irritability and morbid disposition of the fluids, favour the most swift progress of the disease ; the air-bubbles sometimes run like wild fire, from cell to cell ; and the scene is not uncommonly closed with a rapidity, that will not admit of assistance.

If an incision be made into the affected part, when the air-bubbles are first formed, it is sensible, and blood is discharged from the arteries in a florid state, as freely as usual ; the *membrana adiposa* is of a darkish yellow colour, and the muscles only

And in what they differ from a local gangrene.

Symptoms.

only appear browner than common. Afterwards the skin becomes inflated, and the muscles, not yet having lost their shape, frequently force themselves out, immediately upon making an incision, with a large discharge of wind, and a quantity of frothy matter. The blood in the vessels is now turned to a black coagulated mass, the *membrana adiposa*, and the membranes in the interstices of the muscles and fibres, and the muscles themselves, putrefy; and lastly, the skin also becomes livid and putrid: from all which it seems evident, that a gangrene brings on a sphacelus, while the blood is yet circulating in the vessels.

A young gentleman about fourteen years of age, had been ill of a putrid fever at a boarding-school, and as soon as he was able to travel he returned to his native air in hope of recovery; but notwithstanding he had the assistance of an experienced

experienced physician, and the bark was freely given, in less than a month an inflammation appeared in one cheek, a gangrenous *emphysema* followed, and a general state of putrefaction took place in two or three days.

I remember a waggon-wheel running over a man's arm, occasioned a simple fracture; but though proper care was immediately taken of it, in two days time an *emphysema* spread up the arm, and all over the breast, shoulders, and neck, and he died on the third day. But the most rapid disease of this kind I ever saw, was in a hard drinker, who, while he was hot in flesh, from taking down an enormous quantity of exceeding strong ale, received a wound through the skin of his thigh, about four inches long. A moderate degree of inflammation followed; but next day the thigh swelled very much from an *emphysema* possessing every
part

The different effects of air being confined in wounds, in good and bad habits of body.

part of it; a most corrosive ichor was discharged, and the day following, when he died, the whole body was in a state of putrefaction, the corpse immediately becoming the most offensive I ever knew: fairly evincing how much a bad habit of body, and an inflamed state of juices, contribute to this unfortunate termination. In sound habits, the effects of atmospheric air from being confined in wounds, are great suppuration, abscess and hectic; but in a bad habit of body, where the lymphatic juices are acrid, or have a morbid disposition, I am persuaded it often, by increasing acrimony, brings on the disease in question, especially when the air is conveyed into the part in a cold stream.

I took a scirrhus out of a gentlewoman's breast, subject to eruptions, and glandular swellings, but I never in my life saw a greater prospect of success, digestion

digestion having come on to my wishes ; and the patient was even so well, in one week, as to play several pools at quadrille. But unfortunately sitting with the affected side, unknown to me (for I never saw her out of bed), against a window which did not shut close, three or four successive days ; a gangrene invaded all the parts which had been inflamed (and thence more irritable*) in consequence of the operation. The whole side and neck were soon inflated, the skin felt springy, rustled upon being touched, and death prevailed before a *sphacelus*, which was coming on, had time completely to give its assistance.

I remember, early in life, to have seen the same accident in a man's leg, who had been a hard drinker. He had a contused wound, not larger than a six-pence, upon his skin, attended with inflam-

* See Ess. on Irrit. in general, p. 208.

mation ;

mation ; and lying in a poor little cottage upon a squab, with his leg against a wretched door, a spreading gangrene soon appeared and finished his life.

A strong lusty working man, aged about thirty-five, on the 10th of December, 1751, fell from a beam. His foot catching upon a joist, the leg was fractured betwixt the calf and the ankle, and the *tibia* just raised through the skin ; so that reduction was accomplished, and the leg laid strait with very little trouble. Retentive bandage only was employed. A large quantity of blood* was taken away, and he was directed to drink barley-water plentifully, to make him perspire.

Next morning, (11th) his foot and leg were warm, there was a particular wildness in his looks, though the frac-

* This blood upon standing a while, was of a florid appearance, and loose texture.

ture had not any bad aspect. His pulse was quick, and rather hard, and his tongue white and dry. I ordered him a saline julep and added nitre to his barley-water.

The day following, (12th) the wildness in his looks was increased, with the addition of an universal tremor, and a delirium, to the other symptoms. His pulse was much as the day before; but upon taking the dressings from his leg, I found a gangrene had invaded the fractured part, and that the foot was nearly cold. Wherefore incisions through the skin were immediately made, dressings usual to gangrenes applied, and he began to take two scruples of bark every three hours. I immediately sent for my old master, Dr. Holbrooke, to advise with him what was proper to be done; in whose absence came my colleague, Mr. Fisher, who then practised surgery with
deserved

deserved reputation. We found the gangrene had advanced nearly to the middle of his thigh, with an *emphysema* reaching within four inches of the body. His pulse was sunk from the first, yet it was much harder and stronger than either of us could expect, among so many desperate symptoms; but though we saw no hopes of recovery, we scarified, dressed as before, and continued the bark; that nothing, according to the established practice at that time, might be left undone, while life remained. Next morning the abdomen being affected, he died; which fatal event probably originated in preternatural irritability, a bad state of the juices, and the admission of external air into the wound. For I had seen the smallest cut, to which he was very liable, as being a carpenter, cured with the utmost difficulty.

The following appearances in the affected

ected part, presented themselves to our observation, and fully describe the local progress of this disease. When I first saw the gangrene it did not appear to have advanced more than one inch above the fracture ; but upon examining strictly with my fingers, I thought I could perceive a small degree of *emphysema* from thence to the knee. I made several incisions through the skin ; the patient was very sensible of pain from them, and some florid blood of a loose texture was discharged. Upon examining farther, I perceived the fluids in the *membrana adiposa* of a darkish yellow colour (which probably occasions the lividness in the skin), and full of very small bubbles. When we took off the dressing next day, this part which appeared so little affected the day before, was now entirely sphacelated to the bone ; and upon making an incision through the skin, the muscles of

the leg immediately forced themselves out with a large discharge of wind, and a quantity of frothy matter. They were entire and of a dark brown colour. Upon cutting into them, there appeared the same frothy matter in the interstices of the fibres. The blood in the vessels was black, and coagulated; and next day the muscles were of the same colour, and putrid.

Above the knee, where the gangrene had not made so great progress, we found the skin, *membrana adiposa*, and part of the muscles destroyed; somewhat higher, only the skin and *membrana adiposa*, which was frothy, and discharged wind upon making of the incisions. Still nearer the body, which from the aspect of the skin seemed to be free from gangrene, the juices only in the *membrana adiposa* appeared yellow, and filled with little bubbles; the blood
from

from the vessels in that membrane was discharged as free as usual, but was now become much thinner than at first when the gangrene appeared.

A tall man, about twenty-five years of age, apparently in a most healthful state, had his ankle torn to pieces ; his bones dislocated, and the muscles of his leg twisted violently, by the cogs of a mill-wheel ; but assistance being called, reduction was soon effected, and proper dressings applied, with bleeding, and the other necessary treatment usual on such occasions. Nevertheless, unfavourable symptoms appeared, and I was desired to see him on the third day. I immediately saw a gangrenous *emphysema* had taken possession of the limb, and that it would putrify ; but as his head was quite clear, his pulse nearly regular, and he no ways restless, I was in hopes I had a local gangrene from an external cause to deal with.

I was however mistaken, for the muscles forced themselves out upon an incision being made ; the next day the *emphysema* had reached the abdomen, and he died.

A man was shot into the middle of the arm, betwixt the elbow and the shoulder, with a horse-pistol loaded with slugs, which tore the brachial artery and the muscles to pieces. I was called on the third day, and found a mortification accompanied with a violent gangrenous *emphysema* had taken place, and the man was dying.

Bark of
no use in
the mala-
dy.

Indica-
tions.

I have tried bark in this untractable malady. I am convinced it does no good, and I am inclined to think it does harm, by increasing inflammation. Keeping the bowels open by saline purges ; and giving the cooling antiseptics before recommended, with small doses of opium frequently repeated, seem to be indicated. Bleeding is a hazardous remedy, be-
cause

cause nervous energy is so very soon destroyed. Hot fomentations are injurious in the manner described in speaking of a local gangrene; and though incisions through the skin should be made, that the spirit of sea-salt, and other dressings may be applied, yet I am fearful it may still be said that this kind of spreading gangrene is incurable.

Prophylactic treatment may be more successful; and I think this catastrophe may sometimes be prevented by excluding the air: or where this cannot be done, by enlarging the wound so that the air which happens to introduce itself cannot be confined. For I observe emphysematous gangrenes, except in the *scrotum*, seldom or never happen, when by accident the wound is made very large. Whereas, where there is already a gangrenous temperament, if the opening is only just

Prophy-
lactic
treatment

large enough to admit air freely, it influences itself, and like a spark of fire applied to a magazine of gun powder, instantly occasions the blowing up of the whole.

C H A P.

C H A P. IX.

ON SPHACELI IN GENERAL.

A SPHACELUS, or as some have called it, a *necrosis (mortuus)* is an extinction of life in the affected part, and absolute putrefaction; from which the patient can only be relieved by a separation or removal of the black putrid mass. But it is sometimes original, and sometimes, as we have just observed, it is the consequence of a gangrene; and like a gangrene, it is sometimes local, and sometimes the whole habit of body is at the same time diseased. An original *sphacelus*, and that produced by another disease, often require different treatment; for at the approach of a local *sphacelus* arising from excess of inflammation,

Some-
times lo-
cal, and
sometimes
general.

whether brought on in consequence of great irritability, by a torrent of acrid fluids, by the improper use of stimulating cataplasms made with galbanum, &c. or by great vigor of the constitution; the method we have before recommended in the gangrene arising from a stagnation of the juices, appears to be proper. But when the swelling subsides, and the parts begin to separate, the method hereafter to be recommended in an original *sphacelus*, should be pursued.

Of this kind was the *sphacelus* in the woman's wrist noticed *, whose arm was amputated betwixt the living and the dead parts below the elbow. By applying a cerate of diachylon, wax and oil, above and round this joint, pledgets of digestive, softened with oil to the confines of the mortification, and over this the stale beer pultice, the separation ve-

* The chapter on amputation, in mortified limbs.

ry readily took place : but we were under great difficulty in saving our patient, in consequence of the absorption of matter ; which, instead of a putrid, brought on an acute hectic fever, accompanied with the most violent white aphthæ I ever saw, and an incessant hiccough which together harrassed the patient almost to destruction. The surgeon, before I saw her, had ordered the bark ; but it would not stay upon her stomach, nor could I make it agree with her in any form. Wherefore spirit of sea-salt, spirit of nitre, juice of lemon, &c. were taken without it, in well boiled gruel or pectoral decoction ; and to these emollient antiseptics, laudanum was added, in hope of subduing the hiccough by lessening the sensibility of the gastric nerves. Manna was joined when she was costive, and a diarrhœa, two or three times, made it necessary after giving
a dose

Apthæan
hiccough
from
absorption

a dose of rhubarb, with a drop of oil of cinnamon, to prescribe a powder of chamomile flowers and starch. But though the separation of the dead parts, which were rendered as inoffensive as spirit of wine loaded with the antiseptic gums, could make them, went on nearly as well as we could wish; yet the aphthæ and its consequences, even after the dead parts were removed, were long troublesome; it sloughed off however in time; and as soon as the patient could take broths and nourishings food, her recovery was not interrupted.

C H A P.

C H A P. X.

ON A LOCAL SPHACELUS.

IT is an original *sphacelus* of which we now mean to treat; this is flower in its progress than a gangrene, seldom fatal, and there is reason to hope with Hippocrates, that the disease will separate, so that the patient may be saved, losing only such parts of the body as have turned black.

Local
sphacelus
less fatal
than gan-
grene.

It shews itself by putrefaction coming or without any previous *emphysema*; and the disease spreads not by the rapid progress of air-bubbles, but by an absolute stagnation of the blood and juices, acrid matter corroding the neighbouring parts in the manner of a caustic.

Symp-
toms.

Now this disease is commonly local, in the beginning at least, in a good habit
of

of body, when it arises from violent injuries; for where the parts are so destroyed, or the inflammation or swelling rises so high, that a circulation can no longer be carried on, putrefaction is a natural consequence; and the dead parts separate by the dressings commonly applied in contused wounds. I lately had a man under my care, who from a violent bruise upon his thigh and leg, without any wound, had a sphacelus of this kind. Fomentations and remedies usual in bruises were applied; but a hard swelling in the *gastrocnemii muscles* of an enormous size ensued, and in a week's time his foot was cold and insensible. The toes, and the top of his foot soon became black; and upon making incisions into them, nothing but coagulated blood was discharged, owing apparently to the circulation being entirely stopped by the swelling above. The stale beer pultice
and

and digestives were applied. In time the foot dropped off at the ankle, and the man recovered. Sometimes indeed it spreads through the neighbouring parts which partook of the injury, but this seldom requires particular treatment: for when it arrives at those parts in which the circulation is tolerably vigorous, it stops under the same management; or when obstinate, it has frequently been stopped by preventing the passage of the diseased fluids in the sound parts.

The symptomatic fever that attends, is such as is common to local inflammation in contused wounds, &c. but where membranes and ligaments, especially about the joints, are much bruised and lacerated, a delirium and convulsions during the crude state of the wound may often come on, from nervous distention and irritation* in the parts

Inflam-
matory
and
nervous
symptoms
to be con-
sidered
distinctly.

* See contused and lacerated wounds in the membranous parts.

which

which are sensible, independent of the mortification. This should put us upon our guard against mistaking inflammatory symptoms for those which arise from the *sphacelus*; because in the former, the antiphlogistic treatment is necessary, while the pulse is quick, full and strong, and till these symptoms of inflammation disappear. Nor should the sinking of the pulse, and the fever which remains, deceive us; for when the parts become insensible from mortification, the inflammation ceases to keep up the same degree of inflammatory irritability; and yet a quickened pulse, and other feverish symptoms, continue from the inflammation which surrounds the mortified parts, till digestion comes on, and the vessels become pervious. Nevertheless, when a delirium happens from the cause assigned, opium is the remedy on which we are to depend for relief.

I formerly

I formerly recited some cases which proved these facts; but they are so very common, and so self-evident, that examples seem unnecessary. I shall therefore only make an abstract from a case in the Philosophical Transactions*, to shew the propriety of the distinctions I have made; and that when a local *sphacelus* spreads, cutting off the communication betwixt the living and the dead part, may effect a cure.

“ On the fifth of November 1713, A man had the *radius* and *ulna* of his left arm broken, and their ends burst through the skin. He was immediately dressed with common astringents and bandage; and in five or six days the arm became black and insensible from the fingers to the shoulder. Deep scarifications were made, and warm dressings applied, but the next day the arm was taken off

* Philo. Transf. No. 370. abridged by Mihles, p. 92.

as high as possible, and the stump cauterised ; for it was perfectly mortified as high as the *acromion*.

Quick silver in
aqua
fortis, its
use in
mortification.

The day following, the mortification was spread towards the lower end of the *scapula*. The edges of it were rubbed with an armed probe dipped in solution of quicksilver in *aqua fortis*, which completely answered the intention, for from that time it spread no farther ; yet the mortified parts were scarified, cauterised, and dressed according to art, for seventeen or eighteen days longer. The sloughs then began to separate and cast off daily ; and after the *scapula* and the remaining part of the *os humeri* were come entirely away, the patient was cured."

The famous instance, in Van Swieten * where the *sphacelus*, after spreading up to the axilla and laying the bone bare, was cured by a woman, with an ointment

* Sect. 432.

that

that resembled Locatelli's balsam, and allowing generous wine; and the subsequent case of the girl were both of this sort; and a multiplicity of similar instances are to be met with, both in practice and in books.

From what has been said about an erysipelas*, it appears that if dispersion does not take place, it either terminates in superficial ulcers or mortification; and when the latter happens in critical *erysipelata*, it is often local. No other symptoms (except the *sphacelus*) than such as happen to local inflammation, attend; and being for the most part surrounded with considerable inflammation, the same remedies we have recommended in a sphaceloide gangrene are proper: it is however well known, that these *sphaceli* will separate of themselves, especially if the parts round about

Mortification
from an
erysipelas.

* Chap. on Erysip.

covered with an ointment, composed of diachylon and oil, or a white bread pul-tice, &c. Of this kind was the gentle-man's case we have mentioned*, in speaking of a phlegmonoide erysipelas, which separated under a white bread pul-tice; and as the subsequent suppuration was very great, the bark was given to preserve his strength. The phlegmo-noide erysipelas spoken of by Hildanus†, which mortified, was undoubtedly of this sort, being cured by scarifications and the common remedies. A woman also had a sphacelus through the skin in various parts of the arm, from an ery-sipelas of several days standing; which was cured by snipping the blisters, cut-ting through the dead parts with a lan-cet, and applying digestives and a neu-tralized ointment.

* See *in loc.*

† Cent. 10.ob. 82.

We have already shewn, that a local gangrene sometimes arises in particular parts from a *metastasis* of morbid matter; and it also now and then happens, that a secretion of fluids which are very acrid, brings on immediately, or in a short time, a *sphacelus* in the place to which they are determined. In this instance the fever leaves the patient, when the *materia morbi* is completely separated from the circulating fluids; or at least no other symptoms appear, but such as are common to local inflammation which surrounds the mortified part. Of this kind seems to have been the example, where a man, fifty years of age, ill of an acute continual fever, had, by a sudden *metastasis* of morbid matter, the extremity of the right foot mortified down to the bone in one night; but by the use of antiseptic topics, the dead parts separated and dropped off, and he recovered.

Local
Sphacelus
from me-
tastasis.

The Baron Van Swieten* mentions that many persons in France, whose blood and juices had been contaminated by eating bad rye, were (probably in consequence of a *metastasis*) seized with mortifications in their extremities: and DOWLING's † family in this kingdom, from the loss of their limbs in the same manner, were deplorable instances of the violent effects of acrimony in the blood, being occasioned as supposed by the same kind of food.

After two or three days illness, an inflammation and a *sphacelus* invaded the back and *nates* of a labourer, about forty years of age. The dead parts separated of their own accord, and an excessive discharge

* Com. Sect. 424.

† I remember the account was published in the news papers, but I do not call to mind meeting with it any where else, except in Mr. O'Halloran's book, who has copied that part which Dr. Wollaston wrote to excite charity. O'Halloran, p. 33.

followed

followed from a deep ulcer, more than a foot square, for a great length of time. He kept a cow upon a little enclosure in a common, which supplied him with plenty of milk; and the many bowls he daily consumed of this readily digested aliment, supported him against so large an evacuation, and enabled nature to triumph over the disease with no other assistance than common dressings. Indeed I have constantly observed, while a desire for food increaseth in proportion to the discharge, the patient often recovers; whereas if the appetite fails and cannot be restored, medicines afford no relief.

An observation.

A pestilential carbuncle (*anthrax carbuncle*) seems to have been sometimes a disease of this kind, but with more virulence in the offending matter; because it immediately burnt as it were the part it affected. Perhaps it may be compared to an eschar formed by a caustic, and

Carbuncle.

seems to have given way to the remedies used in promoting its separation, together with medicines suited to the state of the patient. Among us it is happy we meet not with so formidable a disease; and we must therefore refer to Riverius*, Wiseman, and those writers who had opportunities of seeing the malady: though in those parts of the world visited by the plague, I believe they are in possession of more powerful internal antidotes than were given before the bark and other antiseptics now in use were known.

Issues and
ulcers.

Local *sphaceli* sometimes attend issues and old ulcers of the legs, from the imperviousness of the vessels, and the stagnating juices by heat becoming corrosive and destroying the parts which contain them; but these commonly give way to digestives, and

* Ob. 477.

mild

mild antiseptic cataplasms alone: the following case, however, was rather more formidable.

A man, fifty years of age, had a violent pain in one hip, which, after some time, by a gradual descent, fixed upon the heel, and under the ankle, on the outside of the foot, as far as the the metatarsal bones, when it became less violent; but a numbness ensued, and continued a year. A fissure then appeared in the thick skin which covers the heel, and soon became sufficiently large to discover that the tendinous expansion which covers it was diseased; yet the ulcer was still neglected about half a year longer, and then the affected parts began to pain him violently. In three days a *sphacelus* appeared where the numbness had so long remained, spreading itself above the ankle; a violent inflammation invaded the whole leg, and enlarged it to twice its natural size,

his pulse being quick, accompanied with great thirst, and a white tongue, the common consequences of inflammation.

The mortified parts were scarified, dressed with digestives, &c. and to the inflamed leg, a neutralized soft plaster was applied. He was put to bed, and two scruples of bark given every two hours, all that night and half the next day. After he had taken the second dose a violent sweat, which continued all night, broke out; and next morning the tumor and inflammation were greatly reduced. His pulse was now regular, and he afterwards slept well in the night. The mortification made not any advance; and when the putrid tendon was sloughed off, and part of the *os calcis*, which was become carious, removed, he got well. And though it is probable, upon the confined

finer ichor being set at liberty, and proper correctives being applied, the mortification would have stopped without the use of internal medicines; yet the bark seemingly did service in this debilitated habit by promoting a sweat. Whereas were the same symptoms to appear in a man of vigor and strong fibre, neutral salts in the beginning, mixed with the bark, would be a better medicine.

This kind of sphacelus is not confined to old ulcers, but also happens to recent wounds, especially when they arise from bruises accompanied with an acrid state of the juices; for stagnating in consequence of inflammation following the injury, they sphacelate the parts with which they are in contact; but a recovery commonly follows rendering the vessels pervious, and correcting the offending matter.

Recent
ulcers.

A man, near fifty years of age, of what
has

has been called an high scorbutic habit, had a small wound, made by a stone thrown against his shin, which soon inflamed: a mortification for more than an inch round followed, surrounded with still greater inflammation; but a period was put to the disease by this method. In older men under the same predicament, I have been obliged to have recourse to wine and cordials joined with the bark, before any progress could be made towards a cure; and constantly finding it true, we must repeat what we long since observed, that the common hot fomentations and cataplasms in these cases will invite a flux of humors, and increase the disorder they are intended to prevent, as will in the subsequent chapter more fully appear.

Compre-
sion.

Violent compression is well known to be often the cause of local *sphaceli*, such as strait bandage, lying long upon any particular

particular part, &c. but these readily give way to simple dressings when the cause is removed. They will also happen in any part where all the nerves belonging to it are rendered incapable of performing their office. This I remember was the case of a woman who for several years had lost the use of her thighs, from a violent bruise upon the *os sacrum*. The mortification, after destroying the part, and most of the *glutæ* muscles, stopped without the least assistance from art; and when I first saw her, which was only two days before she died, there did not appear any other indisposition than might be expected from the large discharge of matter, which seemed to be the immediate cause of her death. But this I imagine very rarely happens, because I have never met with it since this instance, which is thirty years ago; owing

owing I suppose to that diffusion of the brain I have spoken of in another place.*

From
cold,

We have already taken notice of a local gangrene from the effects of cold, or the penetration of frosty particles, and of the methods used to prevent a *sphacelus*: we are now to consider a *sphacelus* actually formed from this cause, which requires no particular method of treatment. It is no unusual thing to see the toes, when mortified, in consequence of being frozen, separate without any other assistance than a stale beer poultice: and some years since I saw a great part of both feet of a lad, which were mortified by lying upon the coal-pit bank, though he had a great fire on one side of him, in a cold frosty night, cured by the same method.

White
sphacelus.

The white *sphacelus*, which happens to the breast of lying-in women, is

* See vol. i. page 162.

mentioned

mentioned in another place†; perhaps there may still be other causes of local *sphaceli* which have at this time escaped my notice; but what I have recorded will lead to them. The most material circumstance in the cure is a speedy separation of the dead and living parts, otherwise the disease may spread in the manner Celsus describes. For the acrid matter will destroy the adjacent parts that are inflamed, and by irritating the sensible fibres, produce a fresh inflammation. In this manner it spreads, and absorption taking place, the whole body becomes contaminated, and death ensues; unless it can be prevented by an early use of the bark, and other antiseptics, as circumstances may require. We will give an instance of this kind which with what has already been said, will prevent

† Treatise on Inflammation.

the necessity of writing a separate chapter on spreading *sphaceli*.

Spreading
sphacelus.

A woman, betwixt fifty and sixty years of age, nursed some of her own relations in a fever, attended with a sore throat; but after their recovery she removed many miles to her own house, apparently without being any way indisposed. Nevertheless, she had scarcely been at home a week or ten days, before she became feverish, and complained of numbness in one leg, which soon put on a doubtful appearance. Coldness succeeded; blisters full of reddish ichor arose, and a perfect *sphacelus* of the whole leg ensued. During this time her pulse kept in tolerable good order; and were it not for the disease described, she seemed to have very little the matter with her. However, in opposition to every attempt to prevent it, the mortification spread over the knee, and kept creeping

creeping from fibre to fibre, till it had invaded the whole thigh. The parts, as the disease proceeded, first swelled, and became somewhat inflamed; greenness, blisters, and corruption followed, and arriving at the abdomen by degrees, the pulse sunk, and she died without ever having been delirious or insensible.

C H A P.

C H A P. II.

ON SPHACELI UNATTENDED WITH
ANY CONSIDERABLE DEGREE OF
INFLAMMATION.

HITHERTO we have treated of *sphaceli* surrounded with inflammation, in which emollient applications are necessary; but it sometimes happens that little or no inflammation appears previous to, or during the *sphacelus*.; but the parts, after perhaps swelling and becoming edematous, gradually also become cold, then bluish, green, and black; the cuticle rises into blisters, which discharge a red lymph; and sometimes the dead parts become dry and indurated.

This is one species of *sphacelus* in which the sentiments of Celsus* should

* Lib. v. cap. 26.

be adopted when he forbids suppura-
 ting medicaments and warm water. I
 know hot emollient fomentations are
 manifestly injurious in this instance;
 and there cannot be any doubt but
 heat and moisture increase putrefac-
 tion. Nor do the antiseptic ingre-
 dients in these decoctions prevent
 their having this effect; for, indepen-
 dant of all other properties, by weak-
 ening they occasion the sound parts
 to give way to the spreading of the
 disease. Even moist and relaxing ca-
 taplasms, though made of antiseptic
 ingredients, where the state of in-
 flammation does not require their use,
 too often extend the malady. Boer-
 haave prevented a *sphacelus* from
 spreading for six months, by drying
 antiseptics; but upon ripening ca-
 taplasms being applied, it ran up in
 three days time as high as the thigh,

Suppurat-
 ing me-
 dica-
 ments not
 to be
 used,

D d

and

and the patient expired. Nor are abundance of other instances wanting to shew the impropriety of this method of treatment, where debility and putrefaction prevail. It is much better to apply a defenitive suited to the state of inflammation above the mortified part; but upon the *sphacelus* itself a dry powder, composed of bark and myrrh, are preferable.

Scarifica-
tions.

Much has been said about making scarifications into mortified parts; but the propriety or impropriety of this practice seems to depend upon circumstances. Where the *sphacelus* is superficial, they are unnecessary; because topical remedies may dry up or penetrate sufficiently to correct the putrid fluids, which extend the disease. But when the putrefaction is considerable and deep, they may be made for the purpose of applying spirituous tinctures, &c. which, notwithstanding what

what may have been said to the contrary, certainly correct putrefaction in mortified limbs, and thus may assist in preventing the disease making a greater progress. But they should not be carried into the sound parts, for the acrid fluids draining into the incisions spread corruption.

CHAP. II.

C H A P. XIII.

ON SPHACELI FROM WEAKNESS AND
DEFICIENCY OF NATURAL HEAT.

Inten-
tions of
cure.

IN this kind of *sphacelus* there seldom appears any other indisposition than weakness; and the parts become black and mortified in the manner last described. Wherefore the only intentions of cure are to promote warmth and a brisker circulation, and to correct putrefaction in the diseased part; for which purpose cordials inwardly, and warm antiseptic topics outwardly, are the remedies to be employed.

Who sub-
ject to it.

Old persons are naturally subject to this malady, but it may also happen to those who are young and middle aged, from any cause which, by weakening ner-

vous

vous energy, impoverishes the blood and debilitates the animal fibres much below the standard of the health, as the case annexed will exemplify. But whatever may be the cause, the treatment is much the same; only joining particular remedies where particular circumstances require them. I commonly apply a warm defensive above the mortification, and prefer dry dressings to those in common use in the manner described. The practice of applying hot bricks, bladders full of hot water, &c. to promote a briskness in the circulation, are preferable to moist fomentations, for reasons before given. Scarifications are seldom necessary or useful. Wine is a principal remedy, and warm cordials should be joined with the bark. But even in this instance, which above all others requires an increase of heat or warmth, I cannot agree with those who advise bringing on in-

flammation to suppress the disease. We have already shewn the impropriety of this practice in gangrenes, and I know of nothing more likely to do injury in a *sphacelus*. To increase warmth or vigor where it is wanting is natural and rational ; but to bring on one disease to cure another, of which it often is a fore-runner, seems to be theorising beyond the bounds of safety,

I formerly gave instances where this kind of mortification happened from low living and dram-drinking, &c. to shew the power of the bark in such cases ; but these are no longer necessary, and we shall only recite those which shew the nature of the disease,

A starved idiot, twenty-three years of age, who lay in the cold in barns, &c. was seized with a mortification which had advanced to the middle of the calf of his leg before it was discovered ; but
upon

upon giving him caudle, putting him into a warm bed, and applying pledgets of digestive, it stopped and separated. The blood which came from the muscles underneath, was so extremely thin and poor, as scarcely to colour a white cloth; but nourishing food alone enabled him to bear the loss of his leg at the end of a month, and he recovered.

A woman, about twenty-three years of age, in a miscarriage, lost an amazing quantity of blood; her pulse was scarcely perceptible, her skin was left exceeding pale and cold, and excessive weakness induced us to think she could not live many days. Wine, however, and nourishing broths in small quantities, often repeated, supported her; but she lay in a hopeless state some time, and in a week or ten days the lower part of her back began to mortify, the sphacelus spreading to a great extent. Af-

terwards her hips, elbows, and shoulders, and other parts on which she pressed, underwent the same change; yet a separation of the dead parts followed; good nursing and the use of simple dressings, and, having nature on our side, by drinking milk, and taking light preparations of the bark, to which after some time small doses of steel wine were added, she bore up against a great discharge, and in the space of eight months perfectly recovered.

Sphacelus
in dropfi-
cal legs.

The swelling which sometimes happens in the legs of dropfical people, is owing in some measure to want of vigor, though distension may assist in bringing it on; because when the water is discharged by the running of the ulcer, it is not uncommon for the dead parts to separate, and a recovery take place, at least for a time; especially when assisted with medicines which invigorate the blood,

blood. I mean those dropfies in which the extravafated lymph has not acquired a morbid difpofition ; for when it becomes acrid, and we fee fmall corrofive inflamed blifters appear upon the legs, I know of no mortification which more certainly ends in death. We fhould therefore avoid puncturing them under fuch circumftances as neither promife benefit to the patient nor credit to the operator. But I will mention a mortification in a dropfy, accompanied with a difeafed liver, in which the united powers of bark and regenerated tartar were worth notice.

A fober young man, betwixt twenty and thirty years of age, was feized with the moft obftinate jaundice I ever faw, accompanied with clay-coloured stools ; and in time his liver appeared to be larger than ufual. An afcites followed, his legs fwelled, became fo cold, that

Dropfy
and jaun-
dice.

that the application of warmth had no effect ; and a perfect *sphacelus* spread itself through the skin and cellular membrane upon the calf in each of them. The dead parts were divided with a knife, common topical remedies were employed, and to twenty-eight ounces of tincture of bark, half an ounce of regenerated tartar was added ; of this he took four spoonfulls every three or four hours ; he made many gallons of water loaded with bile ; nor did this evacuation cease while any water remained in the cavity of the abdomen. And though the discharge from the legs no doubt assisted in unloading the body, yet the disease in the liver was most probably removed by this medicine ; for the jaundice left him, the ulcers in the legs were healed in the common manner ; and, contrary to my expectation, instead of a temporary, he received a permanent cure. Since this instance

stance, I have found the same remedy in a variety of cases a powerful deobstruent. I have again ordered it in a jaundice with success, and again seen it carry off the water in a dropsy; but what we have said about this disease requiring different remedies under different states of irritability should be remembered; for I know it will not always answer our purpose when the water in a dropsy is to be discharged. But to return.

Œdematous legs are sometimes apt to inflame and sphacelate in small spots; or, when an abscess happens in them, the lips of the ulcer, after the matter is discharged, become black and dead, and call for suitable assistance. But these appearances are in general readily subdued by antiseptic balsams; Galen's antiseptic cataplasm before spoken of, and the bark, either with or without cordials, as particular circumstances may require; or should

Œdema-
tous legs.

should an acrid state of the juices give rise to the complaint, as I have known happen, the next chapter will furnish materials for the relief of the patient,

C H A P,

C H A P. XIV.

ON SPHACELI FROM A MORBID DISPOSITION IN THE JUICES, IN PEOPLE ADVANCED IN YEARS.

AS people advance in years, the secretions, it is reasonable to suppose, are not carried on in the same regular manner as in youth; some of the finer excretory ducts, perhaps, become useless, and hence that acrimony in the fluids we observe in old people; or such a state, it is very well known, is not uncommonly induced, by free living, high seasoned food, an inactive life, &c. or both causes may be joined, so as to give a very unfavourable temperament to the body. Accordingly, we very often see in people towards sixty years of age, or sometimes sooner, the skin and cellular membrane

One cause of acrimony in the fluids of old people.

membrane sphacelate in consequence of the slightest injuries; and the disease creeping on day by day, soon becomes formidable, if not prevented by art.

State and
symp-
toms.

We have before, in chapter the 10th, spoken of a local *sphacelus*, from the juices acquiring acrimony by stagnating in the inflamed part; but in the present instance, the whole state of the fluids are affected, and the general habit of the patient is to be corrected, before a cure can be obtained. There is commonly a slight inflammation, with a sort of an erysipelatous cast, and for the most part very little swelling attends; nor is the fever troublesome, though the degree of irritability, according to the pulse, rises to one hundred and twenty; but the pain in the affected part often requires the use of opium to give the patient ease. It was in this kind of *sphacelus*, that I first discovered the impropriety of using
hot

hot fomentations. I saw the disease daily getting ground upon me, and suspecting their effects, I laid them aside with a happy issue; and after more than thirty years observation, I am convinced that Celsus was perfectly right in affirming that in such instances they cause the disorder they are intended to prevent.

It is true, I have seen tedious recoveries by such treatment; whereas, a dry powder, composed of equal parts of bark and myrrh, very often puts an end to the spreading of the disease, in a few dressings. Of the propriety of this method of proceeding, I have several times had the most decisive evidence; for being called, where the disease spread under fomentations, it was immediately stopped by this contrary management. Afterwards the dead parts separated by antiseptic balsams, to which the *tinct. theb.* may be added, if the irritability of the
fore

fore requires such an assistant. Nor should the application of a defensative, above or round the part, be forgotten; and a simple diachylon plaster will often be found the most proper; for there is generally a heat under what has been called a strict or rigid fibre in these habits, that will not admit of any thing that heats or irritates.

I have prescribed the bark in these cases, and seen it given by others; but I apprehend with little or no advantage, because the disease continued to spread till the topical remedies just mentioned took effect: and the subsequent ulcer, notwithstanding its continued use, daily enlarged, its edges being slowly eaten away by a corrosive ichor. Spirit of salt taken inwardly will commonly be found more powerful in correcting the acrimony of the fluids; but when neither of these remedies are effectual, and
eruptions

eruptions with white scales, appear in other parts of the body; I have several times seen a grain of quicksilver divided in starch, given twice a day, in eight or ten days time, do wonders. The bark and spirit of salt proving ineffectual, is a criterion which points out the necessity of giving mercury. This method of giving it evades all hazard: and if the bowels are occasionally kept open, the teeth will not be affected; but more of this when we treat of mortifications of the toes, with which the present species has some connection.

Mercury
when to
be used.

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I have preſcribed the bark in theſe caſes, and ſeen it given by others; but I apprehend with little or no advantage, becauſe the diſeaſe continued to ſpread till the topical remedies juſt mentioned took effect: and the ſubſequent ulcer, notwithſtanding its continued uſe, daily enlarged, its edges being ſlowly eaten away by a corroſive ichor. Spirit of ſalt taken inwardly will commonly be found more powerful in correcting the acrimony of the fluids; but when neither of theſe remedies are effectual, and
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Mercury
when to
be used.

C H A P. XV.

ON MORTIFICATIONS OF THE FEET
AND TOES.

THE crural artery and its branches being found ossified in a gentleman aged sixty-seven, who died of a mortification which began in one of his toes*; an opinion took rise, that the same cause mostly produced this disease, and that there were no hopes of recovery. Experience has proved the falsity of this reasoning; and though the malady is

Cause: always to be dreaded, yet we have sometimes the pleasure of seeing our patients get well. It most commonly happens to old people, but we also meet with it in those not far advanced in years, who, from free living, &c. have injured their

* Philos. Transf. No. 369, p. 226.

constitutions. In the former a deficiency in nervous energy may alone be the cause, or this may be accompanied with an acrid state of the juices †. In the latter both these causes are mostly joined; and preternatural irritability with great pain often attend the whole.

Now when the pain and preternatural irritability are great, opium is indispensable; but it cannot always be followed with success, because the disorder is often incurable. Besides, though under pro- Opium,
per regulations, I believe opium to be a most powerful remedy in this disease, yet it will sometimes increase it; nor is it always alone sufficient to effect a cure, the assistance of other remedies being requisite. Its being given in large doses will frequently frustrate our intentions; and it may also be rendered useless by improper applications to the part.

† See last Chap.

When not
success-
ful.

I do not remember ever seeing one instance of opium succeeding in the cure, or in the mitigation of this complaint, where fomentations and turpentine digestives were used : and I do believe we might prescribe it to eternity without success, were no alterations to be made in these particulars. I am very certain, fomentations, of whatever kind they may be, increase putrefaction in sores ; and that in this mortification, when a red line has pointed out a disposition in the disease to stop, a repetition of the fomentation has frequently interrupted nature in her progress towards a cure, and assisted in hastening the patient to his grave ; especially when aided with those dressings which invite a flux of humours to the part.

Means of
rendering
it unsuc-
cessful.

The use of opium in this instance appears to be in lessening the irritability of the affected part, because pain is not capable

pable of bringing on either inflammation, or *sphacelus*, as pain itself evinces.

And why should not our sedatives be applied immediately to the affected part?

Lenients, indeed, have been recommended, and I have not the least doubt, but soaking the foot and ankle in warm milk, and applying a simple emollient pultice, is a method preferable to that commonly used; and the patient will often derive much advantage from its easing pain.

Lenients,

Not alone
sufficient.

Nevertheless, remedies being mild and soft, and lying easy upon the part, are not sufficient; they should not only have a property of procuring ease, by taking off tension, but they should have an innate property of lessening the irritability of the nerves: and for this purpose various sedatives may be necessary, as preternatural sensation does not always give way to the same remedy. Opium, it is true, in general, lessens all kinds of

preternatural irritability for a time; but the disease occasioning this affection can often only be entirely removed by the native balsams, essential oils, and the like. Pitch has a powerful sedative quality; and an ointment of thin consistence, composed of equal quantities of this ingredient and bees wax, with a large quantity of oil, will, for the most part, be found a remedy perfectly capable of allaying, without inconvenience, that kind of irritability which commonly prevails in this disease: and by mixing tincture of myrrh, or the like, along with it, we have a good antiseptic for the parts, where, on account of the *spbacelus*, antiseptic dressings are required. If a proper quantity of opium be added to the bread and milk pultice, which covers the whole, it will be found a better remedy than the simple pultice only. In some cases, an anodyne emollient cerate,

rate, made of diachylon, the powder of marsh-mallow leaves, or linseed flour, a little wax, opium, pitch, and oil, should be preferred: though I have several times seen dry dressings of bark and myrrh put an entire stop to the mortification even in worn-out constitutions where death seemed inevitable; and I generally now have recourse to them in this complaint.

By this method of proceeding, there is less necessity for taking large doses of opium, which very frequently bring on a drunken delirium, make the patient sick, take away appetite, and thus do mischief instead of good; as is evident from their no-way stopping the progress of the disease, when they have these effects. Whereas, small doses, frequently repeated, will gradually lessen nervous irritability, without such inconveniences. I can aver, that I have repeatedly seen

this kind of mortification removed under the use of anodyne topics, when we were obliged to leave off opium, because it brought on a delirium, and took away the appetite, without producing any good effect: and it may, I think, be laid down as a rule, that unless the patient can eat mild, nourishing food, there will be but small hopes of a cure.

A man, about sixty years of age, who had been a free liver, and rather corpulent, was seized with this kind of mortification; and the parts were so very sensible, that he could not bear a stale-beer pultice which was first applied. Recourse was therefore had to a white-bread pultice, and the bark and myrrh powder, which agreed perfectly; and when the disease had spread half up his foot, it stopped. Betwixt the dead and living, and to the parts actually dead, antiseptic balsam, to which the *tinct. thebaica* was added, was applied. Separation took place,
new

new flesh arose, and the lips of the ulcer had a tendency to heal; but he had a great aversion to all kind of medicines, and it was with difficulty we now and then got down a dose of opium to procure him a good night. He could take little or no food, his chief support for several weeks was Geneva and water, and at last he seemed to die rather from being worn out than of the disease, which was apparently subdued without much assistance from nature.

When this kind of mortification is accompanied with an acrimony in the juices, it requires other medicines besides opium. I many years since read an author I cannot now refer to, who advised mercury in the cure of mortifications in the feet and toes of old men; because he said, they arose from the scurvy*. And some

* The word scurvy has been applied to a variety of diseases, which have no affinity with each other; and
I only

some years since, being foiled in an attempt to cure a mortification in the toes and foot of an old gentleman at Retford, I communicated this information to the late Dr. Booth, who had the immediate care of the patient; and had the pleasure of reading, in a letter from him soon after, that he had a recourse to a resolution of sublimate; and that though the disease had spread to the middle of the foot, yet it soon stopped, after he began to take this medicine. We followed the practice, which has been long well established, of suffering the dead parts, without scarifying, to drop off of their own accord, with perfect success. Since this, a person under my care, in a similar instance, recovered, while the sedatives mentioned were applied, and an electary taken, composed of bark, gum guaia-

I only understand it in this instance, as a particular kind of acrimony, which mercury will correct.

cum,

cum, and cinnibar of antimony, after opium by the mouth had been fairly tried, without any good effect. But where the lips of the sore are tucked in, and eaten away by a corrosive ichor, the blue pill is a better remedy.

However, though we approve much of sedatives in the diseases we have described; yet there is a mortification in the feet and toes of old people, in which they appear to me to do injury. A month after a frost and snow, in January 1776, an active farmer, eighty years of age, was seized with a black spot upon the end of his great toe; presently the cuticle began to separate, and a *sphacelus*, in some time, extended itself to the foot and neighbouring toes, till they were all destroyed. During the progress of the disease, the fairest trial was given to opium. At first he took a grain, *twice*, presently double this quantity, then the same dose every four

Sedatives
when
they do
injury.

four hours, and afterwards oftener, for a month; but the disorder daily gained ground under mild applications, and his health became so greatly injured, that we suffered him to return home, leaving off all kinds of medicines, and had very little hope of his recovery. Nevertheless we ordered him to drink wine, to live upon a generous diet, and to apply to the foot, a mild digestive, and the stale-beer pultrice. But he preferred his own malt liquor, lived in common with the family; and went on for a month at least, without any considerable alteration. In the result his health amended, the mortification stopped, above half his foot dropped off, and he is now in good health. In this case then, which comes within the description given of the mortification of the toes and feet, I am persuaded opium did harm; and if we reflect upon the matter, will it not seem probable that it must

must always do harm, where nervous influence is less powerful than it ought to be? In a man of eighty, notwithstanding he was very active at that time of life, the *vis vitæ* must of course be weakened. The cold, as he told me, had a powerful effect upon both feet, and perhaps, by destroying the remains of nervous energy in one of them, the mortification was brought on, and afterwards in some degree spread, by the assistance of opium; because it stopped when the opium was laid aside, and a little vigour given to the habit. To prevent, therefore, an indiscriminate use of this medicine, in all mortifications of the parts we have been speaking of, we will more clearly, as far as our present experience enables us, distinguish the cases in which sedatives may do service, and those in which they should not be employed*.

* See vol. i. p. 206.

It

It is easy to conceive, that in people advanced in life, who have not been very temperate in eating or drinking, the juices may have acquired acrimony; and, accordingly, the disease in question seems sometimes to arise from this cause, accompanied with an extreme degree of irritability of the part; which may, perhaps, be owing to the constant irritation which such a state of the juices, when they once stagnate, must occasion; in which state, opium and the alteratives mentioned seem to be proper.

Opium
when pro-
per in this
disease.

It begins with a black or blue spot somewhere about the toes; the cuticle separates, a lividness appears underneath, the disease gradually extends itself to the foot, and the ulcer which follows has sometimes different appearances in different parts at the same time. In one part, perhaps, there is a perfect *sphacelus*; in another, new flesh appears; and in a third

third, the lips of the sore are tucked in, and seem to be constantly eaten away by a corrosive ichor. Pain, more or less, is a constant attendant; inflammation, and a swelling of the parts is not uncommon; a most certain criterion is the sensibility of the parts of the ulcer which are alive; and the pulse is quickened in proportion to the degree of inflammation which prevails.

On the contrary, when the mortification arises from the *vis vitæ*, or nervous energy being destroyed, a perfect *sphacelus* keeps spreading forward; the parts die apparently without corrosion, and there are no signs of an acute sensation when they are touched: all which seem to evince, that sedatives in this instance cannot afford relief, nor is mercury admissible. In short, wherever irritation has a share in increasing gangrene, opium will be useful. When death, in a particular

When not proper.

Mercury when not admissible.

ticular part, is the consequence of a deficiency in nervous energy, warm and invigorating remedies are preferable: but when a mortification in the extremities, as often happens, comes on, where nature is worn out, and incapable of assisting us, what can be expected from art?

Of late, cataplasms in a state of fermentation composed of honey, flour, and yeast, have been recommended in mortifications. Imagining fixed air to be the universal acid, which probably is the most powerful antiseptic in nature, I thought it might be serviceable in superficial *sphaceli*; and accordingly tried it in some large sphacelated spots, in an œdematous leg. The first day it seemed to agree; the next it gave pain, and occasioned a bad night. In the morning the *sphaceli* were surrounded with inflammation, and a flux of humours invited into the part; wherefore I laid it aside,
and

and cured the patient in the common manner; and the faculty will judge of its use in mortifications attended with great nervous sensibility, where opium is necessary. For honey is an escharotic, and not being altered by this preparation produces its usual effects:

F F C H A P.

C H A P. XVI.

ON THE AMPUTATION OF MORTIFIED LIMBS.

Reasons
for not
amputat-
ing till
the mor-
tification
is stop-
ped.

THE frequent re-appearance of *spha-*
celi after indiscriminate amputa-
tion to stop their progress, introduced a
very contrary doctrine, that it ought not
to take place, when necessary, till the
mortification was not only stopped but
the separation of the dead and living
parts somewhat advanced: and we ap-
prehend the latter part of this admoni-
tion is more necessary, not only that the
disposition to mortify, and the impover-
ished state of the blood may be altered,
but as it may prevent the ill consequen-
ces of cutting through parts that are
become more irritable from being lately
inflamed

inflamed. In our treatise on irritability in general*, we have pointed out some inconveniencies from irritating those parts which have been inflamed; and some years since taking off the cone in the stump of a thigh, brought on more inflammation, fever, and suppuration, than happened after the first operation.

Effects where inflammation had long been gone off.

But sometimes the effects are of a different nature. "An Austrian officer
"had his hand miserably shattered by a
"cannon ball, and being destitute of
"help, in a wood for three days, a mortification which extended almost to
"the elbow with great swelling and inflammation quite up to the shoulder,
"ensued. But in three days more, by
"the use of fomentations, the stale-beer
"pultice, with *tberiacal*, and taking
"the bark, the inflammation abated, the
"swelling began to subside, the edges

When it had not entirely disappeared.

order well

Journal of Medicine, &c. Vol. i.

F f 2

" of

“of the mortification were separating,
 “and the dreadful symptoms that for-
 “bad amputation, were now so much
 “altered, that the surgeons did not at
 “all hesitate to take off the limb. But
 “this was done to very little purpose,
 “for three or four days after the ampu-
 “tation, his jaw being fixed by a con-
 “vulsive attack, and his countenance
 “greatly distorted, he expired*,” ow-
 “ing probably to the increase of irritabi-
 “lity, and to the violent effects it had
 “upon the whole nervous system†.

How to be
 avoided.

But in mortifications, these inconveni-
 encies may often be avoided by following
 the practice of making the amputation
 betwixt the dead and living parts after
 separation has taken place; by drawing
 back the sound flesh, and cutting round
 the bone that some part of it may be

* See Ranby on Gun-shot Wounds.

† See Dissert. on the Nerves, and on Irritat. in general.

laid

laid bare underneath, in the manner Celsus* has long since advised. This, though it may not be accompanied with the *eclat* usual to what is called a capital operation, yet the patient receives a satisfactory cure; and those who reflect on the skill necessary for executing this mere mechanical part of the profession, will have more pleasure in shunning pain and danger than in acquiring the reputation of being an expert operator. I have constantly, for many years, followed this practice whenever I had occasion to remove a mortified limb, where it could be conveniently done; and I some time since met with a very good instance in support of such procedure. A woman had a mortification seized her hand and wrist, from violence of inflammation which spread itself within three or four inches of the elbow, before I saw her.

* Lib. vii. cap. 33.

However it now luckily stopped ; and besides the dressings to the ulcer, we applied antiseptics to the dead parts, to prevent their giving us trouble. The surgeon, and the relations to the woman, now wished to have the arm taken off above the elbow ; but I painted out to them some inconveniences, which I had seen from cutting through parts lately inflamed ; and that we should make equally as good a cure, by sawing through the dead bone, as by performing a painful, unnecessary, and hazardous operation. Accordingly, waiting till there was sufficient room for the saw, we cut through the bone without pain, or without giving the least fresh trouble to the patient. The skin, and some of the muscles being left lower on the back part of the arm, the surgeon turned them up over the bone by degrees, and made, much to his satisfaction, a very good cure,

When

When a sphacelus stops upon a joint, Celsus says "an incision must not be made in that part." But sawing off the ends of the bones, and cutting away the tendons, which will give no pain, may be sufficient to prevent the ill consequences that have sometimes happened from taking off limbs at the articulation, with a neglect of these circumstances. For though the fingers, the *os humeri*, and even the thigh-bone, have been removed by dividing the joint, without bringing on any troublesome symptoms; yet convulsions and death are apt to follow amputation when made in the joints of the larger extremities: probably from the distention of the nerves, which happens in consequence of the swelling in wounds of membranous parts. Not that we mean to exclude the common method of amputating in mortifications where particular circumstances

Sphacelus stopping at a joint.

may happen to make it necessary; remembering that the after-treatment, or what we call medical surgery, is the principal requisite to a good cure: of which we shall speak in its proper place.

CHAP.

C H A P. XVII.

ON GANGRENOUS ABSCESSSES.

LE DRAN, in his chapter on the *fistula in ano*, speaks of a large gangrenous abscess in this part, but describes only a purulent abscess of which we have already spoken. Mr. Pott has been much more explicit, and says the cellular and adipose membrane are affected in the same manner as in the disease called a carbuncle. He has described the symptoms, variety, and progress of the complaint, with accuracy; and considering the fundament as the sink of the body, it is rather surprising that we do not oftener meet with virulent abscesses in this part. I have met with but few of them:
the

About
the fun-
dament.

the inflammation had an erysipelatous appearance ; the skin and cellular membrane both became putrid and sloughed away, leaving an opening sufficiently large, for the application of antiseptic dressings, by which the ulcer was cured.

An early
opening,
when to
be made,

An early opening when the matter begins to fluctuate, may prevent mischief ; and if there is a fair opportunity for making a free incision, we shall do well in discharging a corrosive ichor before it has committed much havock ; the remainder of the cure will then differ no way from that laid down for the treatment of the modern carbuncle.

Of the
tendons.

But the most dangerous abscess of this sort is that beginning in the tendons about the toes and feet of people advancing in years ; and deluding us for some time, after the onset, with fallacious hopes of a recovery. A small abscess forms upon or about the toes, and tolerable good matter,

ter, or matter and ichor mixed, is discharged: upon examination we find the tendon to be diseased, and the ulcer sometimes puts on a putrid appearance. But this for the most part is commonly soon got over by apposite dressings; the tendon separates in putrid rags, new flesh arises, the sides of the ulcer shew a disposition to heal, and give reason to expect all will be well. But at the time we are in expectation of finishing the business, if not before, a fresh abscess forms on the top on the foot, where we have much more to do with putrid tendons; but even in this situation we commonly make head against the disease for a time, till the membranes and tendons about the ankle are all dissolved and spreading up the tendons in the leg, great suppuration exhausts the patient. Sometimes, indeed, he dies before the putrefaction of the tendons, ligaments, &c. has made so great
a pro-

a progress; for there is in this disease, seemingly, always a worn-out constitution. The appetite fails, the patient is weak, sleeps ill, and though his conversation is lively, while he lies still, yet upon being moved his weakness shews itself sufficiently to point out the danger of his situation,

If any considerable inflammation happens to attend the forming of matter, a fever in proportion accompanies; otherwise when the matter is got at liberty and the inflammation is gone down, nothing of this kind molests the patient, who seems easy and quiet for the most part under his malady. He drinks his wine or ale with pleasure, and I have no doubt finds it refresh him; nor do I know of any thing, assisted with nourishing broths, which does more service, if kept within due bounds; not forgetting that many under these circumstances

have

have been free livers ; and that in their allowance, regard must be paid to former customs. I have tried the bark in this instance without effect ; no other advantage arises from opium than making the patient sleep ; and yet by diet and proper topical applications, we sometimes enable him to hold out with some degree of comfort to himself a considerable time : and when the scene is closed, it is commonly without disturbance. With one of these, I apprehend all gangrenous abscesses which may happen to the body will correspond ; for in every instance a combination of putrid sloughs and pus, gives appellation to the disease.

C H A P. XVIII.

ON STRUMÆ, OR THE EVIL.

Strumæ,
what,
and why
so called.

AS abscesses not unfrequently happen in this complaint, we are led to treat of it in this place; and for reasons that will be obvious in the next chapter, it is necessary to recollect, that Hippocrates* used the word *Xoipades* to signify chronic swellings of the glands in different parts of the body; but says those about the neck are the worst. Celsus† calls them *strumæ*, gives nearly the same account of their nature and situation, and adds the authority of *Meges*, about their being found in women's breasts. Paulus‡ says they are indurated glands in the neck and other

* De Glandulis.

† Lib. v. cap. 38. art. 7.

‡ Lib. v. cap. 35.

parts

parts of the body, especially in the groin; and in this all the Greek writers agree. They also concur in opinion that *Χοιραδία* being derived from *Χοῖρος* *porcus*, a hog, the disease took its name from the glands in the neck of swine being subject to this complaint: the Latins afterwards introduced the word *scrofula*, or *scrophula*, from *scrofa*, upon the same principle; though some refer it to the multiplicity of their increase, like the offspring of a sow; and hence the words *strumæ* and *scrofula* have long since been used as synonymous terms.

Strumæ;
and
scrofula
synony-
mous
terms.

This affection seems to be a disease *sui generis*; and I believe all will agree with Celsus*, that it is extremely troublesome, of long continuance, and, whether cured by the knife or medicaments, is apt to break out again near the old scars. When I have met with it in the

A disease
*sui gene-
ris*.

* Loc. cit.

breast

In wo-
men's
breasts.

breast of women, I have found it more troublesome, after excision, than in any other external part; one gland sprouting up after another for a tedious length of time, even when they have apparently all been removed, so as to try the patience and skill of the assistant. All writers, from the days of Hippocrates, are of opinion that this disease forms those tubercles in the lungs which occasion pulmonary consumptions; those swellings of the mesenteric glands which bring on the atrophy; and it appears to be hereditary, of which I know no more certain criterion than its lying dormant, sometimes for one generation, and appearing again in another; a fact abundantly demonstrated by natural history.

Heredi-
tary.

All swell-
ed glands
not stru-
mons.

But we must not mistake enlarged glands in the necks of young people, for the disease in question; those have always been distinguished from *strumæ* by

the best writers ; they are commonly single or detached from each other, often globular, though some flat and spreading, mostly if not always loose ; and to the best of my remembrance, they feel perfectly smooth. Whereas *strumæ* are knotty, form a chain of glands, or as Musitanus* expresses it, they hang like grapes depending from the same branch, which seems to characterize the disease ; and instead of being loose, they are thoroughly connected with the neighbouring parts. Nor are swelled glands, which arise from any cause except a strumose habit, to be numbered in that class, though they appear rather rough, flat, and spreading ; for various cachexies, as we shall have occasion to shew, will bring on these symptoms ; and therefore to be certain of the disease, it should be traced.

Described.
ed.

* Chirurgia, &c. cap. 44.

G g

But

Inflamed
eyes,
chapped
lips, and
swelled
nostrils,
not characteristics
of
the disease.

But sore inflamed eyes, accompanied with pastey face, swelled or chapped lips, and swelled nostrils, have been looked upon to be characteristics of this disease; and even some of our modern nosologists have adopted this definition; but surely without proper authority, for I believe no writer is to be met with able to support such an opinion. Vogellius says, *scrophula tumor glandularum, colli et mesenterii, indolens, obduratus*; and the most accurate Linæus, *struma; glandula infarcta; nodus indolens, solidiusculus pressione obtuse sentiens*." Which perfectly agrees with Hippocrates, and those writers who have thoroughly examined the subject. It is true, swelled chapped lips, swelled nostrils, sore eyes, &c. sometimes accompany *strumæ*; but these do not constitute any part of the disease, because they are common to other affections; and because the *struma* very frequently appears

pears without any of them. Wherefore we ought first to be sure of the habit being strumous, before we are at liberty to suspect such a *diathesis* present from the appearance of those symptoms.

The primary cause of this disease is one of those secrets in nature that has not yet been unveiled; but it is said to be an affection of the lymphatics. It certainly is of the lymphatic glands; and if it be hereditary, it must be owing to structure; and, like the gout, may be increased by an existing cause, which may render these strainers perfectly incapable of performing their office, or the fluids incapable of passing through them. Some will have it that the glands are relaxed; but I rather apprehend there is some deficiency in their form or nature: but upon opening and examining some that were taken out, I could only discover that they were distended with viscid lymph.

Owing to
form or
structure.

Perhaps their first appearance, which is rather uncertain, may be occasioned by a revolution in the habit about five or six years of age; and it is asserted that at puberty this disease sometimes entirely wears off without medical assistance. I believe it may now and then become dormant; but to eradicate it, in my opinion, nature must be changed: it is liable to return, and, as far as I can judge, those swellings of the glands which entirely disappear, are not *strumæ*, but another affection of the glandular system; of which we shall hereafter have occasion to take notice.

This disease may be mitigated.

These ideas seem to be verified by success in practice; for I believe we seldom do more than mitigate this malady; and by proper treatment it is often in our power to render life comfortable. To remove the glands by an operation, if it could take place, would be the most expeditious

expeditious method; but they are so thoroughly connected with the neighbouring parts, that an advantageous excision can seldom be effected with safety and advantage, unless they are only few in number, and situated at a proper distance from the principal arteries. Hence the more common method of attempting to disperse the tumors must generally be pursued,

Excision
of the
glands,
when to
be at-
tempted.

For this purpose, from what I have been able to learn, those remedies which remove obstruction, render as much as possible the glands pervious, make a derivation from the part, and strengthen the system at the same time, are most to be depended upon: but these are much more successful when the disease is attacked in the beginning, before the obstructions are confirmed, or the glands spoiled; and then some effects may be expected from their use. Clearing the

Internal
remedies.

primæ viæ with small doses of calomel, assisted with an apposite purge, lays the ground work of our proceedings. I have seen large indurated glands subside under the use of the *sal soda*, and the application of a volatile plaster. The common assistant, burnt sponge, certainly reduces the bronchocele; which shews that it acts upon the glands. What is therefore expected from calcined marine vegetables is reasonable; and I have seen the practice of giving small doses of Epsom, or Glauber's salt, daily, dissolved in a tumbler of water, so as to procure at least two stools a day, serviceable in reducing these tumors. It must not however be forgotten, that there is an ebbing and flowing in this malady, which mostly happens in spring and autumn; and I have often seen the glands when enraged by this disease, subside in a little time,

time, if not irritated by external or internal remedies.

Dr. John Fordyce * recommends the Bark. Peruvian bark as a resolvent and discutient in the *scrophula* or the *morbi glandularum*; Dr. Fothergill † soon after wrote an ingenious paper upon the subject, and this was followed by another from Dr. Bond ‡, to confirm the practice: since which, writers have looked upon it as a medicine of the most powerful influence in the cure of this disease,

I have attended to its real effects however in *strumæ*, and though it may assist general strength, I have not found it adequate to my wishes in reducing these tumors, or even in abating very slight strumous symptoms; and imagine, if we were to neglect entirely in its favour the method of cure, which may be selected

* Lond. Med. Ob. and Inq. vol. i. † Med. Ob. and Inq. Lon. vol. i. ‡ Ib. vol. ii.

from those who have written experimentally, we should be laying aside, in many instances, the intentions which ought to be pursued. We will therefore examine the ground upon which this opinion about the bark was founded.

Its effects
in the
scrophula
examined.

The first case we meet with in Dr. Fordyce's paper, of bark being successful after calomel, was in a considerable swelling of great part of the parotid gland, as well as the glands on each side of the neck, in a young lady, sixteen years of age, after inoculation; but though they resembled strumous glands, yet there might be a material difference in the two diseases, as will presently appear. Her health was ultimately established by that change in the constitution she afterwards underwent; and in the subjoining postscript we leave the reader to judge whether this can be admitted, as a case in point.

point, to shew the efficacy of the bark in strumous cases.

The second case of hard tumors in the breast, and under the *axilla*, with fore nostrils, and thickened lips, appeared first in a woman after lying-in, when her milk was going off; some of them being the reliques of former swellings, from the same cause: and it must be observed, that the bark was not given till after the calomel, antimony, the woods, gum guaiacum, and Neville Holt water had been tried, of which we shall take notice in our general remark; though it is not foreign to our purpose, to call to mind in this place, that we have no account of *strumæ* appearing before these symptoms; and a doubt arises whether they were strumous or not *.

The third is a clear instance of the bark resolving a hard swelling, formed

* See Postscript.

slowly

slowly under the left ear, and along that side of the lower jaw, in a young puny girl, four years old; if the *unguentum ad strumas Lusitani*, which was applied, afforded no assistance. But topical applications have often powerful effects upon swelled glands; and if none were expected from this ointment, why was it applied? I very lately had an instance in a young woman of relaxed debilitated habit, where the glands on one side of the neck swelled greatly and much resembled *strumæ*; but they arose seemingly from a tardiness of circulation through the gland, because they entirely disappeared in a fortnight from the application of the *emplastrum sticticum* alone; whereas, had the bark been given, the effects might have been ascribed to the wrong remedy. Nor can we ever be certain of the effects of any medicine when auxiliaries are employed. [The remainder of his cases are not apposite

posite to the disease in question †: but though we are not convinced from any thing advanced, that the bark cures *strumæ*; yet we join Dr. Fordyce in opinion, “that in tumified glands, where
 “the habit happens to be feeble, and the
 “circulation weak, from constitution or
 “accident, bark is a most efficacious
 “medicine ‡.”

The first part of Doctor Fothergill's paper is to prove the power of the bark in the scrophulous ophthalmia; of which we shall take notice when we resume our subject, after examining those on the same subject by Dr. Bond. However, we may here observe, that his reasoning deserves close attention, as it may be useful for various purposes; and that there cannot be clearer evidence against the power of the bark in discussing strumous glands, than the facts he produces; for in an

† See Postscript.

‡ See Postscript.

indurated

indurated parotid gland, from an hereditary scrophulous taint, no considerable benefit accrued. It seemed to stop the progress of the distemper, but did not cure it; nor did the bark, a year afterwards, afford relief, when the chin and upper lip began to be covered with a thick yellow scab, moist and itching; but a course of deobstruents, sea-bathing, and the use of Scarborough-water, subdued these symptoms. He apprehends the bark put a stop to the increase of the tumor, and rather softened it, but this was all. He met with *many other cases* (he says), in which it had the like effects, restored a better state of health in various respects; and laid a proper foundation to proceed upon, in attempting a cure by *other methods*; but he did not find that success from it in scrophulous ulcers, as might be expected: from which honest account of facts, it seems pretty evident that

that we are not to expect assistance from its resolving, but from its invigorating property.

In Dr. Bond's account of a lady, with several clusters of scrophulous tumors in the neck, it appears that the cure had been attempted by many, and severe, courses of medicines; and she was so reduced by loss of appetite and a slow fever, that she could scarcely walk across the chamber. Some of the tumors, which were at least two inches in diameter, underwent a partial suppuration, and discharged an ichorous matter from fistulous ulcers. They were so numerous, large, and hard, and her constitution in general so shattered, that he could not flatter himself with any rational prospect of success from medicine; yet she was perfectly cured by the application of a discutient fomentation, the *emp. e sapone*, and the use of the bark. In the other
of

General
remark.

of a young girl, with a large number of scrophulous tumors, which had gradually increased for many years, a slight salivation for several weeks was first pursued, which rather increased than lessened the swellings; but they were afterwards almost dissolved (reduced I suppose) by powdered bark and steel. Nor does it appear that any medicine could have been better devised in both instances, to restore strength and vigour, so necessary after the process undergone. But it is reasonable to conclude, that in every one of these cases, in which a course of deobstruents took place, they were preparatory to the use of the bark, and favoured its success, which might not have happened without their assistance; otherwise, how came it to pass, that Dr. Fothergill could not remove strumous glands by bark alone?

The *struma*, it is well known, is sometimes accompanied with sore and inflamed eyes;

eyes ; and I have tried, in strumous ophthalmias, when the edges of the lids were only a little red, with a slight inflammation on the conjunctiva, whether the bark was to be depended upon in subduing the disease in this mild state ; but have always found auxiliaries necessary. And, from the whole, I have long concluded, and found it true by experience, that when in infeebled, relaxed habits, bark is given in strumous cases, deobstruents ought to be joined ; and by uniting it with *sal soda*, or regenerated tartar, a very powerful invigorating deobstruent is produced. To the glands, when swelled and uninfamed, a volatile plaster may be applied ; mercurial ointment rubbed about the part does no service ; but issues are certainly employed with advantage.

To some of these methods we are Sea-water obliged to have recourse in inland countries, to disperse these tumors ; and by continuing

continuing them a due time, we now and then lessen the disease. But in places adjoining to the sea, sea-water is a remedy on which they have great dependence in scouring the glands, and bracing the fibres. I have sent some thither early in this disease, who, from drinking the water, and bathing in it, have found some benefit by having their swellings reduced. But I refer to Ruffel on Sea-water, who has written a practical book, with many precepts and cautions, which ought to be known to those who are not already acquainted with them; and by collecting all the cases in point into one view, they will be found useful. The *quercus marina*, which they also use externally, as a discutient, we have not, on account of distance, an opportunity of trying; and we can only, therefore, get information about it from books, which at best only leads to the knowledge required.

However,

However, with the utmost attention, these glands will sometimes undergo a partial suppuration, yielding a matter peculiar to themselves; and a tedious business is generally the consequence, not only from the obstinacy of diseased glands, but from there being frequently a succession of gatherings for a great length of time. When we see this is likely to happen, I usually apply a gum plaster till the tumor breaks; or is fit to be opened. If the dissolution seems to be tolerably complete, and the tumors are seated in the necks of women, I pass a small seton; otherwise I open from one end to the other, and follow the practice of applying dry precipitate to destroy the remainder of the gland, or Mr. Wathen's caustic, composed of arsenic and antimony, which in general is a better remedy: and when the gland is removed, the

Suppuration.

H h

ulcer

ulcer will heal more readily under cold water than any other dressing.

Diet. But in hereditary diseases, more dependence is to be had upon diet than medicine; and it is well known, that health may be maintained, and the whole constitution changed, by a proper choice of aliment: whence it has been affirmed, that by diet alone, all the intentions of medicine may be answered.

Medi-
cines not
to be dis-
carded. But though it must be allowed, that food is in general, more agreeable to the stomach than medicines, and that a proper diet is a principal matter in the cure of all diseases; yet medicines are not to be entirely discarded: it frequently happens, that the patient has not any appetite, and where the appetite is bad, the forcing down food can do but very little service; because it will not be properly digested. Under such circumstances, we should first attempt to bring on an inclination

inclination for food, and by strengthening the powers of digestion we lay the foundation of our proceedings; for if digestion is well performed, food does its proper office, and health is the consequence.

For this purpose, we should employ means that are gentle in their effects; for weak stomachs cannot bear rough usage. A few grains of calomel and a little rhubarb, or the like, will often be necessary to clear the *primæ viæ* before any other medicine is given; and when we remember, that one drop of laudanum will often lessen the irritability of the whole body, we have reason to expect advantage from small doses of all kind of medicines which act upon the nervous system. I can aver, I have seen better effects from light warm bitters, than from stronger doses, especially when the rule of Celsus has been observed, of mix-

What
kind ne-
cessary to
assist food.

ing with them an opening medicine. A cold infusion of the bark, or chamomile flowers, in small quantity, with some bitter cordial tincture made with spirits, and a few drops of elixir aloes, will commonly be sufficient, without loading, or being disagreeable to the stomach, to excite and keep up the appetite*; and having accomplished this point, food properly adjusted will do the rest.

Low diet
con-
sidered.

But of late there has been an idle theory suggested contrary to the clearest evidence †, that the digestion in the stomach is performed by a fever; which does not only neglect facts, but it supposes nature to take præternatural methods to perform her processes in the

* Upon particular occasions may be added a few drops of steel wine, elixir of vitriol, regenerated tartar, &c. as may suit with the prescriber's intention.

† Reaumur long since proved, that food was digested by a menstruum; which has since been confirmed by Mr. Hunter, Spallanzani, and others.

animal

animal œconomy : accordingly I have seen systematic practitioners keep their patients upon starving diet, even in chronic complaints, to avoid bringing on a fever in the stomach, and its consequences ! I am clear in opinion, that many have been brought into fatal diseases by this speculative nonsense : we cannot, therefore, do better than reprobate a doctrine so replete with mischief ; and as facts make a stronger impression than declamation, we shall shew the effects of such treatment, even upon persons free from illness.

A lady of good constitution, about thirty years of age, being seized with a fever, sent for a physician, who happened to be from home. She therefore took a dose of Dr. James's powder, which operated smartly, and next day she found herself entirely well. Unluckily, however, the Doctor called to see her upon

H h 3

his

his return, and advised her to abstain from almost all kinds of food, assuring her she would be ill again if she exceeded the rules he prescribed; and putting her upon extreme low diet, her stomach soon became weak, her appetite left her, and she was ill in earnest.

From this time he was assiduous in his visits, and pursuing his theory with vigour, the patient daily grew worse upon his hands; wherefore at about three months end, he advised her to go to Bath. She set out propped up in a chaise, but it was impossible for her to proceed many miles, though most gently driven; and being lodged in a relation's house, I was desired to see her. In the whole course of my life, I never saw any living person approach so near to the state of a skeleton; her flesh being almost gone, she could not stand, her pulse could scarcely be felt, her eyes were sunk, she was troubled
with

with a diarrhœa, and seemed to be upon the brink of the grave.

Upon talking over the whole proceedings, it was very evident she was almost starved to death, and food was recommended; but the assiduity and care of her former physician, had made so great an impression on her mind, that she could not at first be persuaded, to enter upon a plan against which he had so often preached: and when I recommended wine, she seemed to have very little faith in my judgment. However, as her relations joined me in opinion, we gradually brought the patient to be ruled; and I began by prescribing the compound powder of crabs claws, in a spoonful of small cinnamon-water; but the first dose, instead of mitigating, increased her purging very much, and she therefore left off all kind of medicine, of which she had long been tired.

H h 4

Nor

Nor did solid food agree better with her stomach. From a long disuse of any thing of this kind, it seemingly irritated, and run through the bowels with great rapidity. However, by persevering, beef tea, gravy, the flesh of cray-fish, lobster, &c. in small quantities, were in time taken without inconvenience; and she soon began to think a few teaspoonfuls of port, with spice boiled in it, agreeable. Milk would not agree with her; but by gradually proceeding, she could in time take more wine, and different kinds of food in greater quantities, which restored her to health.

Rarely
indication
for it in
the stru-
ma.

To what extent the starving regimen may be carried by hypothetical men, is hard to say; but there is rarely indication for it in the present instance; the fibres in general being weak and relaxed, and diet, which lessens viscosity, and gives vigour to the solids, seems to be
most

most proper, if mild, and incapable of producing gross humours. The patient should abstain from salted meats, and much fat, and live upon the flesh of grown animals, of light and easy digestion. Venison and game, in moderate quantities, seem to be proper food, on account of the active juices their flesh contains. Fish, which some advise, may be omitted except fresh herrings, mackarel, lobsters cray-fish, and the like. Milk in debilitated habits is proper; but pork should be avoided, as affording gross juice. I see no objection to the use of well-brewed medicated malt liquor. Wine also, under proper regulations, where the constitution requires it, will not only be a pleasant beverage, but a good medicine. Air and exercise should not be omitted, and the cold bath, I believe, is serviceable. But all these remedies must be used moderately, and in some constitutions abstinence

mioufness must be observed, for there is no laying down a general rule: a plethoric patient requiring reduction *et vice versa*; and though we have drawn the strait line, yet such additions and alterations must occasionally be made, as particular circumstances require, and which it is impossible to specify.

POST.

P O S T S C R I P T,

ON SWELLED OR ENLARGED GLANDS
WHICH ARE NOT STRUMOUS.

IT is happy, however, that there are several kinds of swellings of the glands which have been called scrophulous, that belong to another class of diseases; and we have set this Postscript apart for the purpose of distinguishing one from the other. Notwithstanding it has been lately asserted, "that there is not one family in twenty in this country, consisting of several children, where this complaint has not in some form, and at some period, made its appearance;" yet we believe the true *struma* is less common than has been imagined, and never happens but in families who are subject to this disease, and that

Strumæ
only in
strumous
families.

Swelled
glands
from ab-
sorption
not *stru-*
ma.

that these are fewer in number than has been apprehended. Those of the contrary opinion seem to think every swelled gland to be a strumous affection; for they say the *struma* arises from the small-pox, measles, hooping-cough, fevers of all kinds, moist and low situations, the obstruction of any natural or accustomed evacuation, extreme cold, lacerated wounds, &c. And might they not with equal propriety have added, that it is brought on by cancers in the lips, gum-boils *, and a gonorrhœa, because these also occasion swellings in the neighbouring glands? Some of these indeed may be occasional, or exciting causes to an increase of the swelling of the glands in strumous habits; yet if this diathesis does not previously exist, subsequent swellings that may happen to the glands

* See Hewson on the Lymphatic System.

cannot

cannot with any sort of propriety be called the *struma*. It is only the reliques of the disease which has gone before; nor did I ever know the evil brought on by any of the above causes, without the glands having before shewn a strumous affection.

I have repeatedly seen swelled glands resembling the *struma*, accompanied with inflamed eyes, after the small-pox, and measles; but I am convinced by their dispersion, or by their suppurating, and by the habit getting entirely clear of the disease, that they were not scrophulous. We have given an instance where swelled glands on the side of the neck, resembling the *struma*, were at once dispersed by a gum plaster. A woman had several enlarged glands on each side the neck, in consequence of sickness, occasioned by suckling; but upon weaning the child and taking the bark, she recovered. Nor is this an uncommon circumstance;

The habit getting clear of the disease, a full proof of its not being the *struma*.

as

as I have had many opportunities of observing. An unmarried woman, about thirty years of age, rather of a relaxed habit, upon taking cold, occasioned a uterine obstruction; a swelling of the glands on one side of her neck, to the size of a swan's egg, followed; but upon taking *sal sodæ*, and wearing a volatile plaster, the obstruction was removed, and the tumor subsided. A young gentleman, about ten years of age, lying one night with the curtains open against a door, from which he received a stream of cold air upon the side of his neck, and throat, a swelling of considerable size appeared upon the part next morning; but though the swelling of the skin and cellular membrane disappeared by the remedies that were applied, yet several glands that were also affected, remained in *statu quo*, and in time some of them grew to the size of a pigeon's egg, and suppurated.

suppurated. In this state I first saw him, and considering it as a local disease, he was cured by topical applications alone. The same effects may take place from any other disease, which occasions a slow circulation through the glands. It is common in large manufacturing towns, especially in the iron trade; and were any of them to gather and break, and become obstinate, as is common to glandular tumors, I know of no greater ignorance than calling the disease the evil. Nor is this the only inconvenience to society; for by classing diseases together that have no alliance, confusion in practice has arisen, and will constantly arise.

We have already observed, that the entire removal of the evil, though it may be mitigated, is not to be expected; but the swelled glands from other causes readily admit of a cure: in the one instance,

Difference
betwixt
the stru-
ma and
swelled
glands,
in what
it consists.

stance, the disease is originally in the make or structure of the glandular system, and subject to shew itself day after day : in the other, the glands are only affected by an adventitious cause that gives way to proper remedies. Hence we see how it comes to pass, that swelled glands in debilitated habits are cured by the bark ; and whenever we cannot trace a strumous taint, and the disease is perfectly conquered, we may conclude it was not scrophulous. Many of those instances Wiseman has given us, I apprehend, were only enlarged or obstructed glands ; because the cure was so perfectly accomplished, chiefly by topical remedies : and it will be evident, that he was not very exact in his distinctions, when we call to mind that he copied from Parey, &c. the *meliceris atheroma* and *steaoma* into his account of the evil ; it being

being impossible for a greater difference to exist than betwixt incysted tumors and *strumæ*.

Loose smooth enlarged glands have above been spoken of, and in addition we shall now observe, that the changes the glandular system undergoes in youth*, occasion these swellings which have undoubtedly been taken for *strumæ*; and given rise to an opinion, that this disease disappears often, without any medical assistance. Whereas it is not the evil which is removed; but these enlarged glands subside from the resolution the constitution undergoes at the time of puberty. They mostly, like warts in young people, vanish of their own accord, provided they are left unnoticed, till this change takes place; otherwise, if topics are employed, and any inflammation produced, they are prevented

It is not the evil that appears in young people but other swelled glands.

* See Russel on the Glands.

from disappearing at the time nature is working a change for this purpose.

When to
be re-
moved by
excision.

Sometimes indeed they continue after this alteration in the constitution happens, and they may then be safely removed by dividing the skin and capsula in which they are inclosed, by a simple incision the whole length of the tumor, and then pressing out the gland, which I have frequently done with the utmost ease. But when the cyst happens to be thick, after dividing the skin, the upper part of it may be taken away by the same operation that sets the gland at liberty. The wound may be cured by the first intention, nor need we be under any apprehensions of the tumor returning like the *meliceris*, when the cyst is left behind; for the gland being entirely removed, and incapable of being renewed like the other, by secretion, the parts, if they are carefully laid down, and kept out of motion,

tion, soon unite, and the cure is complete. There is no danger of dividing any of the branches of the carotid artery by this operation, nor indeed does any hæmorrhage ensue. Whereas when the tumor is dissected out, the patient undergoes much more pain, and much more hazard, as I have experienced where I could not press them out, from their having been inflamed by attempts to bring about a cure. I have met with enlarged glands of this sort in women's breasts, increased to a very considerable size. Upon dividing the cellular membrane, and capsula, they slipped out as clean as a kidney, and the wound admits of the cure just advised.

In women's
breasts.

Children, and young people have not unfrequently a breaking out in the hind part of their head, which discharges a thin ichor; and unless kept very clean, a swelling of the glands on each side ap-

Swelling
of the
glands in
the neck
from an
eruption
on the
hind part
of the
head,

I i 2

pears,

pears, very much resembling the *struma*; but upon cutting off the hair, washing the parts with milk, occasionally applying a mild digestive, giving small doses of calomel, joined with a gentle purge, together with such other alteratives as the constitution requires, and abstaining from all kind of food that may create acrimony; the patient in no great length of time gets perfectly clear of the disease and its consequences. In leucophlegmatic habits also, especially in young women, attended with a *chlorosis*, a flux of humours sometimes shews itself in the head and face, with swelled inflamed fore eyes, discharging great quantities of ichor, together with swelled nostrils, swelled lips, glandular swellings in the neck; constituting a train of symptoms, that by modern writers have been called scrophulous, but which I apprehend are owing to a depravity in the humours,

Leuco-
phlegma-
tic habits.

humours, and to absorption of part of the fluids, obstructed about the head; because, upon the disorder being removed, and puberty elapsed, it does not return. Besides, one kind of chopped and swelled lip, which has also been supposed to be strumous, is certainly owing to local relaxation; because I have frequently cured it with linen cloths wet in cold water, assisted with bandage. It is smooth, unattended with any humour, and the part has only the appearance of being relaxed.

After all, perhaps the inflamed eyes, &c. Dr. Fothergill cured with the bark, might be a disease of this kind; as there is some doubt from his faithful narrative, whether it was strumous or not. Otherwise, how came it to pass that the bark was not equally effectual in scrofulous glands, and scrofulous ulcers, as in what he supposed to be a scrofulous ophthalmy,

Remark
about sore
and in-
flamed
eyes.

thalsy; unless they were different disorders? It is well known that in inflamed eyes in relaxed habits, the bark has long been known to be useful; but when attended with a flux of humours, his method of joining opening medicines, and giving a grain of calomel every other night, rendered it a more powerful remedy; for though he seemed not to have any dependence on this last assistant, yet I apprehend it was a principal part of his prescription*; and that either calomel, or small doses of quicksilver, should always be joined with the bark in similar instances. Whereas in the *struma*, mercury affords no relief, except when given to purge.

Swelled
glands
from
feeble-
ness of
consti-
tution.

In swelled glands, from feebleness of constitution, it is only necessary to clear the *primæ viæ*, before we enter upon a

* See Mercury in Venereal Ulcer, Lond. Med. Journ. part i. fo. 86.

course

course of the bark : but where a flux of humours prevails about the head and eyes, after purging with calomel, &c. it will be farther necessary to unload the habit, by increasing the secretion of urine ; and for this purpose diuretic salts must be given. But there is no evacuation equal to that made by a seton in the neck ; it seemingly does more service than all the other remedies put together : nor does it interfere with the bark, when the relaxed disposition of the patient requires its use.

A young lady about fifteen years of age, was troubled with swelled lips, her nostrils and glands in the neck were in the same situation. She was blind from the swelling and inflammation of her eyes, which discharged a corrosive ichor that excoriated her cheeks ; a torrent of humours flowed from behind her ears, and her whole face partook of the violence of the disease. She was pale and relaxed,

and to the best of my remembrance, I never saw what has been called a more violent *strumous ophthalmia*. She was purged with calomel, and Glauber's salt repeatedly. *Sal soda* was given her, laudanum was occasionally dropt into the eyes*, which gave ease, and probably lessened the irritability of the parts, and the vegeto-mineral water of Goulard was applied; cold water, however, proved a better lotion. But though these rather lessened the complaint, they did not remove it, till a seton was put in her neck, and recourse had to simple lime-water, of which she drank half a pint, with a little milk, twice a day: this treatment entirely cured her, and prevented the necessity of using the bark, which was intended to have been given; but the success I repeatedly have had by this method in similar instances, induced me not to

* See *Ophthalmia*, vol. i.

overlook

overlook it on the present occasion. Nevertheless, after the parts are unloaded in feeble relaxed habits, the bark may be of great service in restoring strength and vigor.

CHAP.

C H A P. XIX.

ON THE DYSHYMENY.

(*δὸς male, a ὑμην Membrana, diseased membrane*) or *sero-purulent Abscess.*

Distinct
from a
disease of
the glands

But not
making
this dis-
tinction,
has em-
barrassed
the
subject.

ABSCESSES in which an affection of the glands, except from absorption, make no part of the complaint, have also been called scrofulous; and by thus viewing two different diseases which require opposite treatment in the same light, even very able modern writers have embarrassed their subject, and perplexed the method of cure they have prescribed. Hence they differ in their accounts about the effects of medicines, in the cure of the scrofula, from the same remedies having been applied in a variety of diseases under this appellation,

lation, in all of which they could not possibly be attended with success.

The disease we allude to, is that which occasions those sero-purulent abscesses that shew themselves in an affection of the membranes, and form those cold indolent tumors which discharge either lymph, a kind of curds and whey, or poor thin matter, so well known under the name of scrofulous abscesses, to the faculty. It is a disease which cannot be classed with any other, and should be treated with its own proper remedies.

Described.
ed.

Wiseman * very plainly saw the necessity of making a distinction betwixt an affection of the glands and this complaint, but was incapable of defining the disease; and fixing upon an acidity in the serum of the blood, for the specific difference, no way enlightened this part of his subject: and we must confess, we

Wiseman
attempted
a distinction.

* Book iv. chap. ii.

know

Cause
pointed
out.

know not how to point out the primary cause of this complaint, unless we call in the aid of similar affections, with whose rise we are well acquainted. For instance, before preparation for inoculation was well understood, I have known large abscesses, especially about the joints, exactly resembling those which have been called scrofulous, in which the membrane was first affected, in consequence of low diet, much purging, a free use of the lancet, and the progress of the disease, so as to weaken the patient below his usual standard of health. I have also observed similar abscesses to follow, after some time, the efflorescences arising from an inflammation of the membranes *; and we have seen, that taking cold, and injuring the membranes †, has brought on a somewhat similar kind of malady; from all which we would infer, that

* See Erysip. vol. i. † See Phleg. Rheu. vol. i.

some

some kind of weakness prevails in the system, and is the cause of the disease in question.

Debility, however, in the present instance, is different from weakness brought on by the causes just assigned, and seems to be owing to an innate morbid disposition of the constitution: for though the membranes first shew the symptoms of the complaint, yet the muscular fibres are also in a different state from those in a healthy subject; and when exposed, there is an appearance not to be met with in any other disease. There are evident marks of want of energy in them, they are emaciated, pale, and slender. Nor is this state to be altered by art; new granulations cannot be made to arise, nor can the matter be changed, either by diet or medicines: but the subsequent ulcer skins over in its own slow way, in opposition to every attempt

Appear-
ances in
the con-
stitution.

attempt to assist nature. Whereas in those abscesses, of which, from being similar, we have spoken, medicines and diet have their proper effect; and we are hence led to conclude, that the untractableness is a criterion of the malady, and that it is owing to a particular affection of the whole body, which is unalterable.

Not al-
ways he-
reditary.

I have known it inherited from those who have injured their constitution by repeated venereal complaints; and yet we have no reason to conclude that it is always hereditary; because we meet with it in many instances, where we have no reason to apprehend its being brought on by family connection. It may be remembered, that the disease sometimes first shews itself in the membranes covering the bones. I have seen the whole pericranium come away in sloughs, and the periosteum in the extremities is no uncommon seat of the malady. More generally
it

it begins in the membranes, covering the muscles, and not uncommonly in several parts of the body at the same time. We have observed it not unfrequently arise in the loins, and sometimes the membranes in the lungs are affected, and inspissated mucus, or lymph, is spit up in coughing; and what is exceedingly curious, though an hectic may come on from an absorption, the glands of the lungs are seldom affected: nor do either tubercles or ulcers appear upon dissection, as I have had some opportunities of learning, even where great expectoration has happened. But coughs are not very common in this complaint, and I think the lungs in general are less affected than the other parts of the body. When the disease takes an unfavourable turn, it is rather owing to the extent, than the nature of the complaint; for moderate-sized abscesses, externally seated, which do not
affect

affect the joints ; commonly get well by proper assistance in time, though an infirm state of health not unfrequently remains.

Large
openings
long in
healing.

It is well known, these abscesses often become full of matter, without inflammation, pain, or fever ; are exceedingly slow in their progress, and nature is frequently so very remiss, that we are obliged to let out the matter when the skin becomes thin, under a plaster, composed of the warm gums. Large openings are long in healing, unless we can make the skin on each side the opening unite with the parts underneath ; which may sometimes be done. Pultices and ointments of all kinds do injury, and linen cloths, wet in cold water, after the matter is discharged, is the best remedy ; as I have many years experienced, if the parts become warm soon after it is applied ; otherwise, if a chiliness succeeds,

no

no advantage can be expected from its use, unless warmed by the addition of brandy.

Instead of deobstruents, which have been found serviceable in the *struma*, tonic remedies seem to be indicated; but bark produces no effect. I have tried lime-water, steel, and an hundred other things, with no better success; for the ulcer goes on in its own way, the fibres continue in the state described, and at last are skinned over by slow degrees, with a smooth cicatrix. The only internal medicine from which I have observed any remarkable effect, is Nevil Holt water; which I have seen do good service, by restraining an excessive discharge in these sores; to which I have added tincture of bark, in hope of mending the appetite; and starch in small cinnamon-water has answered my purpose,

Medi-
cines in-
dicated.

pose, when a diarrhæa has been troublesome.

The swelling of the fingers, which has been called scrofulous, is the disease we have just described, and is cured in the same manner.

CHAP.

C H A P. XX.

ON ABSCESSSES OF THE JOINTS.

COMMON purulent abscesses happening about the joints, require no particular treatment; and even when matter is formed within the joint itself, by accident, without any previous disease, there is no danger or inconvenience in cutting through the capsular ligament, and laying the whole open; on the contrary, a happy cure is a common consequence. The membranes, if they are dressed properly *, send out new flesh, the ulcer fills up, and heals in the usual manner. A man had a wound made by accident, on the side of the knee, which lacerated the upper part of the

Common
abscesses
of the
joints,
how to be
treated.

* See Wounds of the Membranes.

capsular ligament; great inflammation followed, and in ten days, or a fortnight's time, when I first saw him, the joint was full of matter. I directly ordered it to be laid open the whole length, and a cure followed without any trouble; nor is this the only instance of success I have met with in similar cases. The *synovia* is no interruption, if it has an easy exit; and the subsequent ulcer readily heals. On the contrary, when the opening is small, and the *synovia*, &c. is increased by irritation, is confined, and becomes acrid, the putrefaction of the membranes is extended; abscesses are not only formed in, but about the joint, and the heads of the bones sometimes become carious. A man received a wound in the upper part of the knee, which penetrated the joint; but at first giving very little disturbance it was overlooked; nor indeed, except a little common plaster, was any thing

thing done to the wound, till by riding about in the cold, a swelling and inflammation occasioned the application of a turpentine digestive, and a white bread pultice. An abscess was the consequence, and this being trifled with, the whole joint and the ligaments about it became diseased and pulpy, in the manner of a white swelling. Nor was there any hope but from amputation. This was not submitted to, and a great discharge, together with a colliquative fever, put an end to this poor man's sufferings. But the advantages that often accrue in this case, from free openings, will be better understood when we treat of wounds of the joints.

But the most common abscess of the joints, is that which accompanies the white swelling, occasioned by the *dyshy-*
meny, of which we treated in the last chapter. This has been said to be a

Chronic
abscess,
or white
swelling,

difference
betwixt
and scro-
fula.

Struma
and dys-
hymeny
some
times
joined.

Well de-
scribed by
Wiseman.

scrofulous complaint ; but we wish those who entertain such an opinion to reflect, that diseases of the glands are one thing, and diseases of the bones, or membranes and ligaments, another : that the disease of the membranes mostly appears without any glandular affection ; and whoever attends to the progress of the white swelling, simply considered, will find that the glands in general are not primarily affected ; and that if any swell in the progress of the complaint, it is owing to absorption. It may happen, and I know it does happen, that the *struma* and *dysbymeny* sometimes affect the body at the same time ; yet they are, and ought to be considered as distinct diseases, the indications of cure are opposite, and in prescribing, an eye must be had to each of them.

The white swelling of the joints is so well described by *Wiseman*, that we cannot

not avoid copying him ; because the moderns have not by any account they have given, rendered his description useless. It is copied from nature, and will therefore always be new and worth notice. He says *, “ swellings affecting the joints
“ are of two sorts, both of them are made
“ by congestion, and increase gradually ;
“ yet differ in that the one ariseth externally upon the tendons, and between
“ them and the skin, or between them
“ and the bone, the other internally
“ within the bone itself. That which
“ ariseth externally affecteth the ligaments, and tendons first, and sometimes relaxes them to such a degree,
“ that the heads of the joints frequently
“ separate from one another, and the
“ member emaciates and grows useless.
“ But for the most part, the humour
“ over-moistening the ligaments and ten-

* Book iv. chap. 4.

“dons, produces a weakness and unea-
“siness in the joint, raising a tumor exter-
“nally; and in progress the membrane
“and bones are corroded by reason of the
“acidity* of the humour.” But accurate
as this account may be, so far as it goes,
still we do not confine the disease merely
to an original affection of the membranes;
as whatever occasions a weakness of
the ligaments, &c. about the joint, may
produce the same effect. A man strains
his ankle violently, and the inflammation
and pain being abated, he begins to walk
about, while the parts are yet very weak;
and neglecting the necessary cautions, to
restore the limb to its usual state, a fresh
swelling of the chronic kind gradually
comes on; the membranes and ligaments
through weakness are obstructed, the dis-
solution and caries above described are

* Change this word to acrimony, and it will then
suit either ancient or modern theory.

the consequence ; and I am certain I have seen some legs lost, through such neglect and indiscretion.

From dissections in these instances, it appears, that the ligaments become much swoln, thickened, and even pulpy. The cellular membrane is loaded with a viscid glairy lymph. Abscesses are formed in the neighbourhood of the joint, and the joint itself is often full of sero-purulent matter. The cartilages are eroded, and the ends of the bones carious. In the beginning, provided the disease is local, comes on slowly without pain, and the parts within the capsular ligament are unaffected, the patient undergoes no great inconvenience, except from being incapable of using the limb. In length of time the joint becomes contracted, in consequence of the weakness of the extensor muscles, and the ascendancy of those which bend the limb. But to go on

Dissections.

on regularly, we will pursue the division Wiseman has made, and first consider the complaint when it is external, upon the tendons, &c. and betwixt them and the skin; observing that it is sometimes local, and sometimes general, as success from amputation in the one instance, and the affection of several joints at the same time in the other, evince.

When external
upon the
tendons,
&c.

The
symp-
toms.

Supposing then a mere weakness, and relaxation, in the membranes and ligaments of the elbow, wrist, knee, or ankle, either from accident or disease, to occasion a white swelling; the first symptom is a weakness in the part, without inflammation or much pain, which is soon followed by an incapacity of extending the limb in the usual manner. The membranes, tendons, and ligaments now begin to thicken, and in time become pulpy; a fluctuation more or less of a gelatinous fluid, is afterwards perceptible

ceptible under the finger: the cellular membrane is gradually loaded with this kind of matter, a sero-purulent abscess follows; and when unconnected with the inward part of the joint, we frequently have it in our power to remove this malady, which, if neglected, too often ends in the loss of the limb, or life of the patient.

If the disorder of the membranes is general, and several of the large joints are affected at the same time, the prospect is discouraging; but it sometimes, however, happens in youth, that even under these distressing circumstances, art is capable of affording some relief. But our greatest hope of success is from the application of those remedies which attenuate viscid fluids, promote their absorption, or such as make a drain from the parts, and those which afterwards strengthen them; when the disease is local

Attempts
to cure
when most
likely to
be suc-
cessful.

Inten-
tions of
a cure.

local, in its infancy, before the membranes and ligaments are much thickened, and spoiled, and when seated externally in the manner described. But I have never known cupping, the fall of warm water upon the part, or rubbing with mercurial ointment, of any use; for whatever advantages may be supposed to arise from friction, the ointment by relaxing, overbalances its effects: and though mercury sometimes proves a powerful deobstruent in other diseases, while the fluids are contained within their proper vessels; yet when extravasated, in the present, or any other instance, I believe it has no power of acting upon them to any good purpose, or of promoting their being absorbed. Nor should relaxing pultices, warm fomentations, or any thing which weakens, be applied, unless inflammation demands their use; as they increase the swelling, and thus manifestly

manifestly aggravate the malady : and I do really believe that by a free use of emollients, which co-operate with the disease, many a limb in this instance has been lost.

Mr. Freke * says he has cured many white swellings of the knee, and other joints, after they have been very large and painful, by bleeding, keeping the patient in bed, in a state of perspiration and apply the *emp. de sapone*, warmed in winter, by the addition of *emp. e Cymino* round the joint : and I can easily conceive he might now and then be successful, because I have known recoveries follow the use of sweating plaster, in the beginning of the complaint ; though I imagine in most cases, he would have been equally successful, had bleeding been omitted, as it is seldom indicated, and, by weakening tends to increase the com-

Mr.
Freke's
method,

* Art. Heal. chap. viii. sect. 2.

plaint.

Fixed
rules can-
not be
laid
down.

plaint. Nor can any fixed rule be laid down for the composition of such kind of applications, as the state of the parts are to determine which should be chosen.

If there be a tendency to inflammation, a neutralized soft plaster takes place; otherwise, a warmer sweating plaster is preferable. At the same time the part may be well rubbed with some volatile spirit, which perhaps will penetrate into the obstructed fluids, and set them at liberty; and every advantage may at the same time be derived from friction, that can be expected, without any danger of those inconveniences unctuous remedies produce. But should any, or all these means prove insufficient to lessen the swelling, the common application of crude sal ammoniac, and vinegar, applied cold, should not be neglected; having several times in this instance, known it do
good

good service *. We must remember, however, that if the stimulus happens to be too great, instead of lessening it will increase the disease, as I have learned, by attempting to take long strides towards a cure; and I am convinced a great deal depends upon adjusting our applications to the irritability of the part, otherwise we either do too much or too little, and our attempts prove abortive. For this reason cold water is sometimes a better assistant to crude sal ammoniac than vinegar; but by which ever method the swelling is reduced, cloths wet in cold water alone should be applied to finish the cure.

Applications greatly stimulating may do harm.

Much depends upon adjusting the application to the irritability of the part.

This is the state in which a perpe-

* Mr. Warner recommends Barbadoes tar in his Cases, page 320, which I have not found equally successful; but I know it to be a powerful attenuant, and I imagine, in the instance he has given of its success, the ligaments, &c. only, instead of the bones, were enlarged; for their becoming hard and bony is not common.

tual-

Perpetual
blister.

tual blister may be tried, and there are instances in the Medical Transactions*, where it was very effectual, when assisted with calomel. But I have had numbers brought to me, to whom it had been applied without any sort of advantage; and the pain and inconvenience which attended, occasioned its being laid aside. In a gentleman, not long since, it occasioned a violent increase of the swelling about the knee, and a subsequent extravasation of a very large quantity of some kind of fluid, betwixt the skin and the muscles, which extended a considerable way up both sides of the thigh, and was removed with difficulty and length of time. I have tried it myself without that satisfaction I wished; and was led to observe, that great circumspection regarding the state of irritability, is necessary in its use; for without this caution,

* Vol. i.

instead

instead of unloading, we may bring on a surcharge of humours, which I am clear has often happened.

A seton appears to me much more A seton.
eligible in this stage of the disease, if the discutients recommended are ineffectual; because I have repeatedly found it answer my purpose, without producing any disagreeable symptoms. I have also seen one instance, where a farrier obtained a complete cure by applying a caustic, which did not penetrate deeper Caustic.
than the skin. It was perhaps owing to success under similar circumstances, that surgeons formerly recommended this remedy. I have no doubt of its being employed with advantage, under proper restriction, and its disuse might be owing to being injudiciously applied; for though inflammation, and a subsequent drain, might remove the disease, before it was far advanced, yet when the

L l membranes,

membranes, ligaments, &c. were approaching to a state of dissolution, caustics would undoubtedly hasten, and increase this kind of termination.

Internal
medi-
cines.

Along with the topics advised, internal medicines should be given; calomel, and purging, are first to be employed, and occasionally to be repeated. The other remedies should, if possible, attenuate the obstructed fluids, and promote their absorption; but I am sorry I cannot, after various and repeated trials, recommend any that can be depended upon. Vomits, I know, will in some instances, where the fluids are extravasated, remove a flux of humours, occasioning local inflammation; but in the present case I agree with Freke *, that they are ineffectual. Bark, and regenerated tartar, or *sal sodæ*, mend the general health. I have several times known them change

* Loc. cit.

the

the complexion from a fallow to a healthful hue; and I look upon it that mending the constitution is a main point. If mezerion has that power of removing obstruction in the membranes, which has been ascribed to it, it must be a proper remedy; but though I have several times tried it, I have not had sufficient evidence of its service. Sarsaparilla will sometimes remove nodes, and there is this to be said in its favour, that it is a most powerful invigorating medicine. Lime-water, steel, and other assistants, as particular circumstances require, may forward the business; but the reduction of the tumor I believe chiefly depends upon external applications.

Hitherto we have supposed the disease to have extended no farther than on this side the muscles, forming a thickness, or swelling near to, or about the joint, from weakness of the parts, and a consequent

L 1 2

obstruction,

Sero-pu-
rulent ab-
scess.

obstruction, &c. of the fluids which pass through the membranes. We are now to advert to the sero-purulent abscess spoken of in the beginning of this chapter, which frequently discovers itself by fluctuation, and a tumor, unattended with inflammation; but often disappears from the application of some of the remedies advised. Some years since, a woman had an abscess of this kind formed by congestion, betwixt the skin and the muscles, almost round the knee; which seemed to contain more than a pint of some kind of fluid. The volatile plaster, recommended in the chapter on the Rheumatism, was applied, and within two days the tumor was entirely gone; but the plaster not being changed, in about a week's time the tumor was as full again as ever. I therefore ordered it to be renewed, and made rather more stimulating, by increasing the quantity
of

of crude sal ammoniac and soap, which had the desired effect; for in the space of forty-eight hours, absorption had again taken place, and the skin and muscles lay in contact with each other. Cloths, wet in spirit of wine, were then applied, afterwards a warm astringent plaster, and a topical cold bath, with a laced knee-piece, which I recommend on similar occasions, finished the cure. Although absorption was so readily promoted in this instance, and many others I have inspected, yet we are not always to expect the same success from this application; owing I apprehend to different habits requiring different kinds of stimulants, to put the absorbent system into action. However, I know of no remedy which in general so certainly answers this purpose in lymphatic tumors, seated near to the surface. Nevertheless, sometimes one, and sometimes another of the

topics recommended, will be found more effectual, in the same manner as we have already observed about internal medicines in the cure of the dropsy *; and variety should always be had in view, till we can determine the specific difference betwixt one kind of irritability and another; and the method most likely to obtain this kind of knowledge, has already been pointed out †.

The serum may be let out with caution.

However, if the tumor does not give way to topical remedies, after sufficient trial, the extravasated fluid may be discharged by making a puncture, and this impediment to their action be removed for a time. But this is to be done with extreme caution, and the wound immediately healed by the first intention; otherwise, if air gets admittance, a train of horrible consequences will ensue: for

* P. 176 backward, † Vol. i. p. 203, & seq.

though

though membranes, &c. about the joints may be cut through with safety in the state before described; yet when they are diseased, and verging upon dissolution, it is instantly increased and followed by a deluge of matter. I have seen, more than once, the whole membranes in the thigh, from their connection with each other, dissolved by air getting admittance into one of these abscesses, and death in consequence of a violent discharge. Whereas when absorption is made to take place, all hazard is avoided, and a recovery may be reasonably expected.

In the former volume we spoke of the phlegmonoide rheumatism *. It is sometimes local, affects the ligaments about the joints, and by weakening the membranes is one cause of the white swellings. It is generally more painful than that species we have described; because

Phleg-
monoide
rheuma-
tism.

* See chap. ix.

it approaches towards an inflammatory disposition; and if ever bleeding is proper in this disease, it is in the present instance, where perhaps Mr. Freke might find it useful. Nevertheless, unless the greatness of inflammation happens to demand their use, emollient pultices, and whatever relaxes, should here also be avoided. A neutralized soft plaster, or the *aqua saturnina* made of vinegar of lead and crude sal ammoniac, are much better remedies; and if pain requires, I add opium to the volatile plaster when that is applied; but if, notwithstanding, the fluids become extravasated, and the tumor separates, it may be treated in the manner we shall hereafter direct.

Abscesses
in the
joint.

It is useful in practice to make three distinctions in chronic abscesses of the joints.

The first is when the ligaments surrounding and connecting the joint are the

the seat of the malady. These dissolving, disunite the bones, and the joint becomes loose and full of matter; but if it is tolerably good when discharged, and if the other symptoms are mild, we may conclude, as the disease did not originate in the bones, that they are not very foul, even though they should be found bare upon passing a probe. Under these circumstances, if the matter has a free exit, the patient is not unfrequently cured with an anchylosis of the joint.

Secondly, when the disease takes its
rise in the neighbourhood of the knee,
betwixt the muscles and the bone, which
is to be discovered by the touch; and
the attempt to cure by discussion will
not be frequently successful, I have
rarely seen external application have any
good effect, owing I suppose, to the cause
being deeply seated, and to the interference
of the parts which cover it; and

Second
sort,

we

we can as seldom remove the complaints by revulsion. The matter more commonly erodes the *periosteum*, makes its way into the joint, destroys the cartilages and connecting ligaments, and great dissolution, all round the joint, with a deluge of matter follows.

Third
fort,

Thirdly, when the disease originates in the bones, &c. belonging to the joint, and extends along the membranes and tendons to the neighbouring parts. In this instance, the first symptom which distinguishes the complaint, is commonly a fixed pain in the joint; which is increased upon motion, and a gradual bulging of the capsular ligament by degrees demonstrates the seat of the malady. Whereas, when the inside of the joint is unaffected, it is free from the complaint, and the swelling is manifestly confined to the integuments. Pain within the joint then is an alarming symptom;
and

and when the tumor has increased in size, till the dilated veins shew the greatness of the disease, and a sero-purulent evacuation follows an aperture in the skin, &c. it is often increased to a most violent degree, from the fluids acquiring increased acrimony by the admission of air; which, together with colliquative symptoms that immediately came on, put us under the necessity of removing the end of the bones, or the limb, to preserve the life of the patient*.

But to be successful in the cure of such of these abscesses as will admit of relief, the parts must not have been relaxed with emollient poultices, &c. and when approaching suppuration becomes evident, they should be covered with a soft mild plaster, and let alone; attending to the general health of the patient, which is

* There are some cases of this kind, in the 4th Vol. of the Ed. Med. Ess, and in Mr. Cheston's Pathological Inquiries, well worth reading,

very

very often much impaired by pain, or the absorption of matter: but when it is discovered where the matter is likely to make its way out, a round opening of small size, should be cut through the plaster, and a proportionable quantity of pultice applied, by which means the tumor is made to protrude in this part, and the matter is gradually discharged through an opening that gives no disturbance. Afterwards the teguments subside, and by the assistance of cold water alone, a cure is sometimes effected, by the coming away of the bones by degrees; or what is exceedingly curious, with little or no exfoliation, though we are satisfied by the probe that they were foul. This I can only account for by adopting Mr. Hunter's doctrine of the foul bone being removed by absorption, and its place being supplied by a new ossification†.

† See Caries.

This

This practice I first learned from the effects of Malvern * water, in a caries of the joints, which was thought to be incurable ; and when I found the advocates for this remedy claimed no other preference than its being purer than other water, I concluded that its good effects arose from its coldness and simplicity, and from its being destitute of those properties which irritating applications produce. Wherefore I imagined the water from the springs in this place would sufficiently answer the same purpose : and upon trial, I found my conjectures perfectly right, having since cured many diseased joints, that I should formerly have amputated. I observe cold water allays irritability, strengthens the part, and defends it from being invaded by a load of humours, which always occasion great swelling, abscess after abscess,

Cold water, its effects as a topic.

* Dr. Wall's Works, published by his Son.

and

and consequently a greater absorption of matter; and hence follows colliquative fevers, which would not have happened, had pultices been laid aside, and this method pursued.

Time re-
quired.

I have repeatedly seen, where the bones became affected by a dissolution of the connecting ligaments, the end of those composing the joint, come away by degrees under this treatment. But time is required, sometimes two or three years, or more; and now and then small dilations may be necessary, to set matter or foul bone at liberty; but during this period, the sores are commonly in a mild state, and less troublesome than those can imagine, who are unacquainted with this method of proceeding.

Dr. Wall * imagines drinking Malvern-water abates the hectic, which not unfrequently attends these complaints;

* Ibid.

and

and I am convinced, a similar effect may be expected from drinking any pure water. But the hectic is abated by the topical application of cold water alone, which checks great collections of matter. Nevertheless, more or less is now and then taken up by the absorbents, even where the flux about the joint is restrained; and *erysipelata* or *apthæ* happen in consequence: but these symptoms are from time to time readily managed by the usual internal remedies, and even sometimes prevented, by washing the matter out of the ulcer at each dressing, with antiseptic lotions. The topical cold bath will often prevent the necessity of making a wound to saw off the ends of the bones, forming the joint; because they will in time either come away piece-meal themselves, or may be easily taken away with a pair of forceps: but should the violence of pain, or greatness of the discharge

charge make this operation necessary, the limb by this treatment will be strengthened, and be better prepared for the purpose.

In the preceding account we have considered the different stages of the disease, which occasions the white swellings distinctly, as they often present themselves to our notice; whence the whole may be better understood when united together: for it frequently happens, that the joint, and the membranes, &c. both above and below it, are at once equally affected from the beginning, and the cure becomes arduous in proportion to the degree of complication. Sea-water and sea-bathing *, or the method prescribed, however, will afford a chance of relieving the patient: if these fail, the joint in time will point out what other method

* See Ruffel on Sea-water, p. 116. Hist. 3d. which, instead of being a glandular disease, was more probably a common white swelling.

should

should be pursued ; but though an unfavourable termination may be dreaded, yet it sometimes happens that both the limb and life are preserved under these untoward circumstances.

A young woman, twenty two years of age, was seized with a swelling of this kind in the knee ; and notwithstanding discutients were used when the disease first appeared, they did not avail : in about a year's time it became very large, and was accompanied with most exquisite pain, especially upon the least motion of the joint. A deep-seated fluctuation was perceptible, and it was expected matter in time would make its way out, and determine our proceedings. An anodyne sweating plaster was nevertheless applied, her bowels were kept open ; she took opium occasionally, and the bark and diuretic salt were also given : but instead of suppuration advancing,

M m

after

after continuing in bed two or three months in this miserable state, the pain gradually decreased, and she recovered in time, with a stiff joint, and rather a fullness of the external parts, which were diseased. This gives her no sort of uneasiness, and she has several years enjoyed a good state of health. Mr. Freke says*,
“ by keeping the patient constantly in
“ bed, not inviting the *sinovia* to increase
“ in the joint † by the motion of the
“ limb, and by keeping the body more
“ inclined to perspire than when out of
“ bed, and the joint being in a more than
“ ordinary perspiration all the time, by
“ the use of the plaster, I have effected
“ many cures ; but I never saw one per-
“ formed by the methods formerly in use
“ by the first men in our profession :”
and this instance seems to favour the doctrine he advanced.

* Art of Heal. p. 225.

† This supposes the disease to be within the joint.

There

Abscess of
the hip,
&c.

There are some peculiarities in an abscess of the hip and shoulder, from their being seated under thick muscles, &c. and we did not therefore enumerate them in the account above given. I have seen some instances, however, where a sero-purulent abscess formed round the bursa ligament of the hip, without affecting the joint; and upon proper openings, sometimes both in the hip and groin being made, and cold water applied, a cure has followed. It more commonly happens, that abscesses in this part originate in the joint. They are usually accompanied with a dislocation of the *os femoris*, from the ligaments, &c. being relaxed. In consequence, the diseased limb at first becomes longer than the other, suppuration about the joint follows, the bone is dislocated, and slipping up under the muscles, the leg which was longer becomes shorter, and an abscess appears in

M m 2

part,

part, under the muscles on the external part of the hip. Mr. Cheselden * says, he has twice seen the matter in the joint, make a way through the bottom of the *acetabulum* into the *pelvis* of the abdomen. And in a dislocated hip, from an internal cause, I once knew the abscess extend itself into the abdomen; matter upon pressing this part, being discharged from under the muscles at the opening in the thigh, and the patient recovered.

External applications, even in the beginning, are incapable of dispersing this deep-seated malady. Setons do not prevent an abscess, nor do they alleviate, when passed as soon as an extravasated fluid can be perceived; and I never saw internal medicines have any other effect, than protracting the complaint. All we can do is, I believe, to preserve the general strength as much as possible, to avoid relaxing applications, and to mitigate the

* Anat. p. 29.

pain by topics, till the tumor breaks ; and this is mostly effected by a warm anodyne plaster. When the matter makes its way out, it should be suffered to drain off gradually, through a small opening ; which nevertheless may be enlarged, when matter is confined, which should never, if possible, be suffered. The plaster should now be changed for cloths wet in cold water, and by these means I have frequently seen foul bone make its way out in length of time, and the parts heal, leaving a fulness in the hip, and a short leg on account of the dislocation.

The shoulder is seldom affected with abscesses of the joint, compared with their frequency in the hip ; yet there are not wanting instances of abscesses in this part, either from foul bone, or diseased ligaments ; and of the head of the bone, either separating spontaneously, or being removed by an operation. There is

Shoulder.

M m 3

now

now in the neighbourhood of Burton upon Trent, a man from whom the head of this bone, and several inches adjoining to it came away of itself, when a boy. The ulcer was cured by a common apothecary, the man has a useful arm, and the cicatrix shews the greatness and extent of the disease.

Mr. White * and Mr. Bent † each of them sawed off the head of this bone, and suffered their patients to remain in possession of a useful limb ; nor is this the only articulation from which similar success may be expected. There is an instance in the Philosophical Transactions, No. 466, p. 270, of an abscess in the articulation at the hip of a girl, fourteen years of age, which broke ; and the surgeon afterwards dilating the opening made by nature, extracted the whole head of the *os femoris*. By injecting

* Cases.

† Med. Comment. vol. iii. p. 4.

tincture

tincture of myrrh, and using a bandage, she was cured in six weeks, and could walk freely, though with halting. I have known the lower end of the *os humeri* knocked off through a lacerated wound, and the patient recover with a useful arm. The lower end of the *radius* and *ulna*, and the upper and lower end of the *tibia* and *fibula*, have been removed by myself and others *, in compound dislocations, with very little defect in the motion of the joint : and Mr. Parke † of Liverpool, has now shewn twice, in white swellings of the knee, that the lower end of the *os femoris* may be taken away in the same manner, with the same

* See Gooche's Surgery, vol. i. p. 323, 2d. ed.

† Letter to Mr. Pott : the other case has not yet been published. Apparently, however, this practice can only take place when the disease originates in the end of the bones ; for if the ligaments and membranes, a considerable way round about, are the seat of the malady, and much injured, removing the bone may not be able to accomplish a cure.

advantages. Whenever it can be conveniently done, it surely is preferable to amputation, which never fails to mutilate the patient; and even those who wish to be thought expert operators, may shew much more skill and dexterity in this than in performing a hackneyed operation.

I have heard of two instances, where the thigh has been taken off at its articulation, without loss of much blood; but the patients both died. In one indeed, the operation was done without much expectation of success, and the other, a youth, was carried off by a dropsy, when the wound was nearly healed. But supposing a probability of its being sometimes done with the desired effect, I know of no advantages, unless a great part of the *os femoris* should be invaded with an incurable caries, that can compensate for the loss of the limb, which

which might probably have been saved by sawing off the head of the bone : for if the bones about the joint are carious, exfoliation is as likely to take place by this operation, as by taking off the limb ; and from the facts adduced, will not the same arguments hold good, when a caries of the head of the *os humeri* requires its being removed ?

On Amputation.

Nevertheless, amputation may become necessary from an extension of the caries, both above and below the joint, an approaching colliquative fever, and a variety of other causes ; but this operation should never take place, without a consultation of those whose experience in medical surgery *, enables them to judge

* See introduct. page 12, & seq.

what

what is most expedient to be done, for the happiness or safety of the patient: and when amputation is the miserable but only remedy, it should be set about with as little parade as possible. There is no need either for the barbarous dress, or frightful apparatus, sometimes used on this occasion. A much smaller strait knife, with a sharp point, which some have recommended, is less alarming, and much more handy, than the large one that has in general been used; especially as it will do every part of the operation. Whereas if we use the other, we must change our instrument as we go on. A silken handkerchief makes the best and most easy tourniquet I ever saw*, and is less terrifying to the mind of the patient than any kind of formal machine; and if there be an abridgment in

* This I first learned by the common tourniquet breaking.

the saw, it will not be less useful. The operation should provide for the end of the bone being deep buried among the muscles, and for these being covered with the skin; for without both these precautions, a pyramidical stump has been a common consequence. This is prevented by making a circular, or common flap, as the part on which the operation is performed may require; by preserving skin enough in the operation to exactly cover the wound, and by drawing up the flesh with a retractor, as high as is necessary for sawing through the bone; and we see where nature divided the skin and muscles, below the elbow, an accidental flap was sufficient to forward and make a good cure. But the success of all these operations depends upon the after-treatment; for unless this be well managed, it is not of any great consequence by what method the limb is taken off; as the healing

Inten-
tions to
be pur-
sued in
the ope-
ration.

Advan-
tage of
after-
treat-
ment.

of

of the stump will commonly end in an awkward manner.

Flap operation,
how it
first came
to fail.

The want of success which brought the first trials * of the flap operation into discredit, was owing to the after-treatment not being properly pursued; because it has since repeatedly succeeded; not always indeed by an immediate union of the whole of the divided parts, but connection so far commonly takes place, that by proper dressings, and bandage, a much shorter time elapses before the cure is complete than when this mode of operating is omitted. More than thirty years ago, my friend Mr. Fisher, and myself, in making the double incision to take off the leg above the knee, agreed to divide the muscles slanting all round towards the bone; and afterwards drawing up the flesh, I readily sawed out the bone from under the muscles, farther

* *Cyrrus triumphalis e terebinth.* in 1679.

than

than could be done by the usual method; but I did not make those advantages of this mode of operating I might have done, owing to my following the common practice of applying lint and flour to the wound. However, I always began to apply a mild digestive balsam at the second dressing, and not cramming the ulcer with this or any other application, its sides gradually approached each other; and by the assistance of a double-headed roller, as soon as inflammation would admit of its being used, I generally had the satisfaction of seeing this business terminate better than when the operation was performed in the common manner. When Mr. Gooch * recommended a third incision, with a small knife upwards round the bone, and drawing back the muscles with a retractor, I tried this method, and found I could leave the end

* Cases and Remarks.

of

of the bone covered any depth I chose, with the utmost facility; but though I always took care to preserve skin enough to cover the wound, I did not yet think of curing by the first intention. However, having learned that the small arteries would contract under any application, and that dry lint is an extraneous body, which embarrasses nature with difficulties; I dressed with a mild digestive balsam, lightly introduced into the cavity from the beginning, after bringing down the muscles, with the usual bandage. A mild ointment was then applied outwardly, and instead of raising the stump with a pillow, I laid it flat upon a doubled sheet, and suffered the patient to lie in a posture most easy to himself; by which method, assisted with the double-headed roller, my first patient in this way, with a very thick thigh, was perfectly cured in less than five weeks, with

with every advantage we could desire; and for many years I pursued the same method with equal success.

When the bone is not surrounded with muscles, a flap on the under side unavoidably happens, when we mean to make a cushion at the end of the stump. Accordingly when I took off the foot a little above the ankle, some years before any account of this operation was published*, a flap was naturally left after this part of the limb was removed: and

Flap at
the ankle.

* I assisted Mr. Doxey of Ashbourne, in taking off a man's leg below the knee for a diseased ankle; and meeting with him about a year afterwards, he told me he wished he had taken it off a little above the affected part, because by making a boot he could have had the use of his knee, and thus have been much more comfortable than in his present situation. He said he had seen something of the kind, to which he could make an amendment. He was an ingenious mechanic, and the conversation I had with him, so thoroughly convinced me of the propriety of his scheme, that I put it in practice soon afterwards with success.

knowing

knowing the mischief that must of course arise from leaving the *tendo Achillis* behind, I cut it away, and thus made the flap useful; not at that time by an immediate union, though I turned it up from the first dressing, but by uniting the parts by degrees after the ligatures which tied the vessels were come away, and the new flesh began to rise. Much about this time, Mr. O'Halloran* revived the flap operation by uniting the parts after digestion, &c. had taken place; and after him Mr. White† practised the flap operation above the ankle, in nearly the same manner. These steps probably gave rise to the circular flap above the knee. To the after-treatment Mr. Alanson‡ introduced, Mr. Mynors|| has since assisted much, in bringing this business towards perfection. Their at-

O'Halloran and White.

Alanson and Mynors.

* Gangrene and Sphacelus. † Cases. ‡ On Amputation. || Pract. Thoughts on Amputation.

tempts

tempts to cure as much as possible by the first intention, is a most rational practice. Covering the wound with the skin, is certainly the most natural application; and when it is placed in contact with the subjacent parts, adhesion and inosculation are well known to take place in a few hours. Great inflammation, that disturbance in the animal œconomy, which irritation, the progress of digestion, and the subsequent absorption of matter produce, are prevented*, as some of our principal writers have long since observed. It only therefore remains for us to compare the double and triple incision, and see which method is most likely to answer these purposes.

Of curing
by the
first in-
tention.

When we proceed upon the plan of making a circular flap, by cutting out part of the muscles, those which remain on the sides are brought over the extre-

Parallel
betwixt
double
and triple
incision.

* See chap. on wounds.

mity of the bone ; the skin, which at first lies loosely over the sides of the muscles, adheres in a little time ; nature supplies the lost substance, and a much speedier cure, and less inconveniences follow, than when the patient is treated in the common manner.

When we pursue the method of removing the limb by a triple incision, after cutting through and drawing or turning up the skin, we divide the muscles, beginning close to the edge of the skin, by a perpendicular circular incision ; and while the flesh is drawn gently backward by the retractor, it is separated from the bone by the point of the knife, as far up as is necessary to leave a sufficient covering, when the parts are healed. By this means we make a circular flap of the whole muscles, without loss of substance, that will unavoidably close down over the end of the bone. The skin and muscles

cles are brought face to face, laid in close contact; very considerable arteries, with the assistance of a little pressure, are as effectually stopped by the skin being thus applied, as they could be by the application of agaric or sponge: and there will be nothing, except the ligatures securing the large arteries, or a bad habit of body, to prevent the first intention, or an immediate adhesion of the skin and muscles taking place. But supposing the amputation to be made above the knee, we shall be better understood by drawing a few lines.

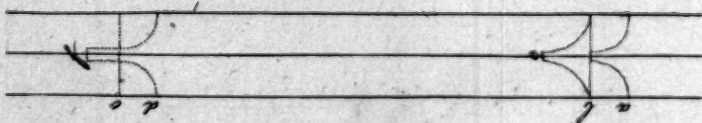
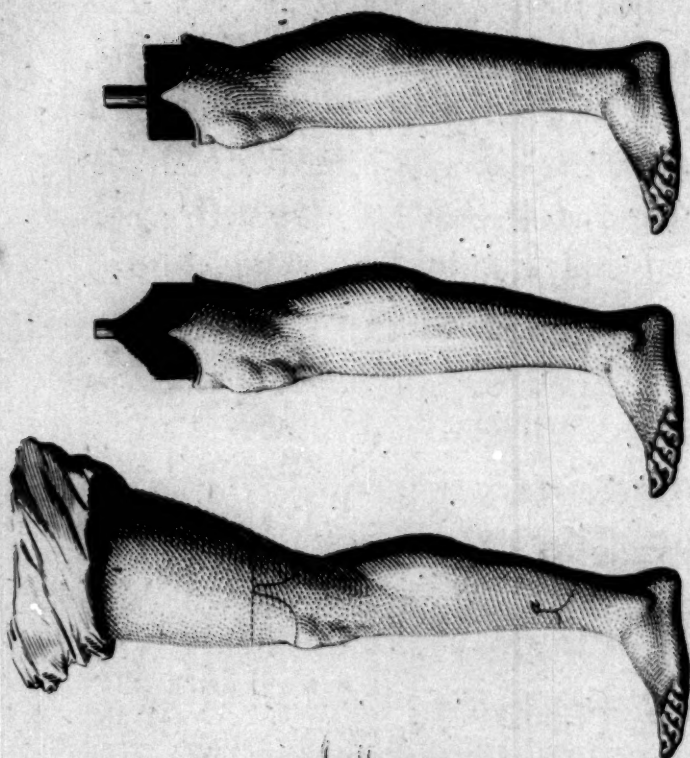
In the first instance, the skin is divided round the limb at *a*, and drawn or turned back to *b*. The slanting incision is then made, and the bone sawed off at *c*. Afterwards, the skin from *b* to *a* being brought over the muscles, of course turns them inward, to make a covering for the end of the bone; in which it

N n 2

must

must be observed we differ from other flap operations, where instead of robbing the part of muscular flesh, we preserve it entire to make as thick a covering as we conveniently can. And, besides, by taking away part of the muscles, the skin cannot be placed in so close contact as when the surface is level; and if they are not placed in close contact, they cannot immediately unite. On the contrary, when the operation is performed by a triple incision, after dividing the skin at *d*, and drawing or turning it back to *e*, the muscles are divided by a perpendicular incision. The third incision is then made close along the bone to *f*, where it is sawn off, by which means the circular flap is not weakened, the bone is buried deep among all the muscles, and the skin is laid close to a smooth surface. I know either method will do better than that which has been in common use; but
it





it may be observed of the latter, that adhesion more readily takes place, a better covering is formed, and the patient recovers with the utmost ease, that can be expected: and what may seem strange, we will call in the evidence of Mr. Alanfon in favour of such practice, executed under rather unfavourable circumstances.

Before he devised his present plan of operating, he amputated a man's leg on account of a white swelling of the knee*, by the double incision; the muscles being divided perpendicularly to the bone, many vessels were tied, and the wound was dressed in the usual manner, with bandage, dry lint, and pledgits of digestive, &c. but in a few hours afterwards, an hæmorrhage occasioned his taking off the dressings, when he was struck with the sufferings of the patient,

Alanfon's
evidence
in favour
of a per-
pendicu-
lar inci-
sion.

* *On Amputation*, p. 23. & seq. 2d ed. p. 36.

upon the lint, which had formed a firm adhesion with the surface of the fore, being separated. Wherefore after the bleeding arteries were secured, and the circular bandage re-applied, instead of dry lint, he placed the skin over the surface of the wound, as far as it would go, and dressed the whole with digestive pledgits.

“ Upon the fourth day after the operation,” (says he) “ I changed the dressings, which all separated with the most perfect ease; the discharge was very small, and the skin was over the wound, exactly as I had left it, and the whole in a very kind state respecting inflammatory tension. In short, the skin soon formed such adhesions, as fixed it where it was first placed; the discharge was uncommonly moderate through the whole cure, and by continuing the bandage to support the parts, with soft gentle dressings, the
stump

the stump perfectly healed in twenty days:

“The cicatrix was in the center of the

“stump, and so small as to be perfectly

“covered with a shilling; and as the old

“skin formed so considerable a portion

“of the extremity of the stump, and

“there had been so small a waste of the

“adipose and cellular parts, in conse-

“quence of the small suppuration; the

“whole looked very plump and full, and

“formed the best cushion to walk upon

“I had ever seen.” In another place he

says, the more muscular substance we

save, the better; and had the third incision

been made, would it not have met these

ideas, and have been a proper provision

against any inconvenience from the bone

being left too near the skin*? Never-

theless, Mr. Lyon† first suggested the

design of omitting all intermediate dress-

ings, and placed the skin in a line on

* See p. 64. 2d. ed. † Ib. p. 43.

Simplici-
ty, its
use in this
instance.

the face of the stump, with a view of uniting the whole by the first intention. Practice evinced the rectitude of his proceedings, and the inconveniences Mr. Alanfon points out from using dry lint after amputation, holds good in every wound to which it is applied: thus by uniting Mr. Gooch's method, with the modern practice of curing by the first intention, we add some improvements to the direction given by *Celsus** seventeen hundred years ago; and by adhering strictly to simplicity, we certainly avoid the greatest part of the danger attending amputation. If the limb be removed by a triple incision, and *coagula* of blood spunged away, the wound, being a level

* There have been different opinions about the passage referred to, in lib. vii. cap. 33. some thinking it ought to be read *in quibus pus movere debet*; others, *in quibus pus non movere debet*; but I think with the latter, because the method of cure he lays down is by the first intention.

surface,

. surface, may be covered with the skin with the utmost exactness; and a pressure made upon it with the palm of the hand will not only occasion adhesion, but suppress any hæmorrhage from the muscular arteries in a very short time: after which slips of sticking plaster, the diachylon ointment, and small bolsters on each side the lips of the wound, may be applied. But above all, the muscles should be placed in a relaxed state, and preserved in that situation perfectly free from motion*; otherwise, by suffering them to be put into action, the union may be destroyed, and digestion the consequence. But even supposing this to happen, it will be brought about with less inconvenience to the patient than if any extraneous body had been applied; and the parts will be readily made to unite, by bandage applied day by day.

* Mynors, on Amputation.

The

The old method of drawing out the arteries, and tying them bare without any adjoining substance; obviates all the objections against the ligature; but a thin waxed thread, does not appear to me to be the most eligible ligature for the purpose; for unless the vessel be tied with the greatest nicety, it may cut off the end of the vessel; which being closed only to the next collateral branch, may sometimes occasion a fresh hæmorrhage, and this is said to have happened. Whereas, it is impossible such an event should follow, if we tie them with long untwisted twelve-penny flax, as I long since recommended in my Essay on Hæmorrhages from divided Arteries. It lies upon the vessel as soft as lint would do, comes away in a shorter time than the common ligature, gives less interruption to the healing of the wound; and the length of
time

time I have employed it, enables me to speak of its utility with confidence.

I always disapproved of the woollen cap, because it is true, that it pulls back the edges of the wound, and gives pain upon being used. The tail-bandage is void of these inconveniences ; but the common four-square piece of flannel, slit at each corner, is equally handy and useful. These, however, ought only to be employed, where we cannot make use of better assistance : for a certain degree of pressure promotes curing by the first intention, more than any other remedy ; nor can it be made with any bandage equal to a roller with two heads. But when the operation is performed in the thigh, or leg, this is inapplicable till the adhesion, &c. has firmly taken place ; because moving the limb to use it before that period, would over-balance its good effects.

Half the diameter, appears to be the
due

Rules of
proportion for
preserv-
ing skin
to cover
the
wound.

The eye
will ge-
nerally
direct.

Caution
about tri-
ple inci-
sion.

due proportion to be observed, in preserv-
ing skin in the amputation of various
sized limbs, where none of the muscles
are cut out; but when excavated, less
will be sufficient. In the lines above
drawn, I have supposed the limb to be
nine inches in circumference*, and the
bone to be sawn off about three inches
from the first incision, one half of which
is skin left without muscles; in which
it will appear that the wound will be
completely covered: but the eye will
generally measure the length of skin ne-
cessary for this purpose, and this will
depend upon practice. When the triple
incision is made, the bone may be brought
out from under the muscles, any length
the surgeon chuses; though moderation
should be observed, that a sinuous ulcer
may not be the consequence. Nor should
the end of the bone be left uncovered

* See O'Halloran, Hey (in Alanson) and Mynors.
with

with the muscles, less than an inch and a half, because more or less contraction of the muscles will unavoidably take place. I agree with those who assert, that if more skin is saved than is necessary to cover the face of the wound, it proves inconvenient, not only in being superfluous, but it will not lay so close as it ought to do, to prevent an hæmorrhage from the muscular arteries. It is better if the lips can just be drawn together with tolerable ease; and by making an incision through the skin on each side the thigh, as the annexed plate directs, we determine the exact breadth of skin to be saved; and we have not only a better opportunity of separating the cellular membrane, and turning up the skin, but we prevent its puckering at the corners, and a more level surface is produced.

Inconveniences of saving too much skin and how to prevent its puckering.

It may be observed that in the leg, we preserve some skin upon the shin, to be turned

turned up before the bone is sawed off at *a*, sufficient to meet the flap, and form a horizontal line across the stump. If the foot be taken off at the place marked in the drawing, the tendon, as we have already observed, must be removed, to prevent the inconveniences that would arise from its being in the way. In a long stump, if the boot be well finished, it makes a lateral pressure all the way up, which gives steadiness; and the machine I have used having a regular shaped foot, with a spring in the ankle, which raises the toe in walking, the patient uses both legs in the same manner.

In the thigh, the ligatures may hang out in the front. In the leg on the sides, and one or other of these methods may be pursued in most amputations of larger extremities; and perhaps complete, as nearly as possible, the wishes both of Wiseman and Sharp. But after all, every
surgeon

surgeon under particular circumstances, must be directed by his own judgment; for there will be instances occur, in which it will be very unfortunate if he be incapable of departing from rules prescribed by others. For supposing an opportunity to offer, of performing amputation by dividing contused and lacerated parts only, a greater exertion of skill will be required to make this act of humanity perfectly answer the intention, than where the poor patient undergoes the pain and misery attending a fresh wound being made in a sound and sensible part.

Surgeons
to be directed by
their own
judgment.

To the gentlemen presiding in hospitals, these remarks on amputation will appear trivial, and the following plates of very little consequence. But to those who do not see an amputation once in seven years, they may, perhaps, be serviceable; especially as various ideas have been formed of the manner in which
this

this operation has been directed to be performed by modern writers.

A different
species of
white
swelling.

Some years since, I assisted Mr. Newton, of Burton upon Trent, in taking off a boy's leg above the knee; on account of a violent pain, which from being borne a great length of time, in opposition to every attempt to relieve it, had emaciated the whole body almost to a skeleton. The knee was rather fuller than it ought to be, but not much swelled. A kind of undulation was perceived upon pressure. The tendons of the ham were contracted, from his keeping the knee bent, and the calf the leg was greatly wasted.—Upon dissecting the knee, after it was removed, the capsular ligament appeared to be sound, the joint was found to be full of that white substance, composed of fat, membranes, and some say, of mucilaginous glands, which we meet with about the neck of the bone. It was perfectly

perfectly springy or elastic, and probably by its swelling, and consequently distending the nerves, occasioned the pain which had so long tormented this unfortunate youth. The parts were perfectly void of inflammation, no fever attended, not a drop of matter appeared, nor could we discover any disease of the bones; so that upon the whole this affection seems to constitute a white swelling of the joints, different from those we have before described, and from that described by Cheselden*; where the excessive pain which occasioned the amputation of the limb, arose from the heads of the bones being a little larger and softer, and probably from their distending the nerves. Whether issues or setons upon the part, or an attempt to remove the cause of distention by revulsion, when the bones are not affected, would have any good effect, it is

* Anat. p. 49

hard to say; but the malady being pointed out, may lead to a cure, if it is curable.

Perhaps it was impossible to have a clearer instance in proof of pain being incapable of creating either inflammation or fever; and if we add to what has already been said in vol. 1st. p. 240, on this subject, the progress, and event of a painful lingering labour, no further evidence can be required to prove beyond possibility of doubt, the truth of the doctrine we advanced, and the falsity of many theories which exist upon erroneous principles, formed on the contrary opinion.

Pain,
and its
effects.

Pain appears to be a nervous affection, its effects are restlessness, sometimes loss of appetite, spasms, and often, when long continued, a wasting both of the affected part, and of the whole body. When violent, it is the most distressing

of

of all afflictions. It ought always to claim our first attention; and where we cannot remove the cause, the nerves should be rendered insensible to its effects, and time gained for our further proceedings.

How to
be treat-
ed.

In the chapter on the dyshymeny, it was forgotten to be observed, that we sometimes meet with fungous abscesses, unattended with inflammation or pain, on the outside of the joints, which undulate upon being examined; and we have more than once been deceived in their contents. For instead of finding sero-purulent matter as was expected, a kind of fungous membrane presented itself, upon their being opened; and I apprehend it has some affinity with the disease in the inside of the joint just mentioned. But this from its situation is much more tractable, for it gives way after the tumor is opened, and the fore

Fungous
abscesses.

begins to digest, to mild escharotics, dry dressings, and a topical cold bath. Probably this is the disease *Purmannus* speaks of, in the 9th chapter of his third book *de Chirurgia curiosa*, which he says "resembles the *fungi* of trees, and seize "on no other part but the joints of the "knees and elbows." The figure he gives does not correspond with this account, and he seems to confound it with the *hydrops articuli*; but I am rather inclined to think it a membranous affection, similar with those swellings in the fingers and toes, which have hitherto been called serofulous.

In performing amputation above the ankle, I have run a cataline through the leg close to the bone, and at one stroke made a flap sufficient for the purpose of meeting the skin which covered the *tibia*, so as to form a straight line across the stump, after the bone is sawed through, and the vessels tied.

CHAP.

C H A P. XXI.

ON LYMPHATIC AND GELATINOUS
ABSCESSSES.

WE have already spoken of some of these tumors, to which we were led by connection ; but it still remains for us to observe, on those which appear on the outside of the joint, and some other places.

It frequently happens from bruises, or without any manifest cause, that a swelling without inflammation or inconvenience, shews itself upon the *olecranon* ; which, when opened, discharges either lymph, or a gelatinous fluid. It often remains long in a state of indolence, and is seldom taken notice of, even by the patient himself, till the size begins to claim his attention. I have often tried to attenuate the fluid, and promote absorption, but do not remember ever be-

At the elbow.

ing successful; though I have often cured the patient by incision. In this process some attention is necessary; for these tumors are apt to inflame upon being opened, great swelling of the neighbouring parts follows, and the obstinacy usual to inflamed membranes prevails.

How
cured.

To prevent these inconveniences as much as possible, the tumor must be opened from one end to the other, and wiped out clean with a moist sponge, that neither air or lymph may be confined to produce a corrosive ichor. I have not yet tried whether curing by the first intention will succeed, though I see no reason to the contrary. Hitherto, in my practice, a very mild digestive balsam lightly into the opening, and externally a diachylon ointment, have been applied; and when the inflammation, which is slow in submitting, subsides, and new flesh begins to arise, I have shortened the cure by uniting the parts with bandage.

The same process may be pursued
when

when these abscesses happen from pressure or bruises below the *patella*; though some have advised setons, which they justly prefer to the practice of removing all the skin that covers the tumor: for surely they did well in exploding a remnant of practice so disgraceful to science! However, though the seton is preferable to a barbarous usage, it remains to be determined, whether it is preferable to the method just described. I have compared them, and it is from thence that I have been led to make choice of incision in my general practice. The seton, it is well known, irritates and inflames, and sometimes forms an abscess, (witness the hydrocele) and should air get admittance along the cord, and be confined, which I have known to happen, a corrosive ichor will be produced that may do irreparable injury, unless it is discharged through a free opening, as we have before advised.

At the
knee.

Seton in
these tu-
mors.

Proper
when un-
der the
mastoid
muscle.

In some lymphatic abscesses, the seton, however, will of course take place, especially in those situated under the mastoid muscle, which it would be imprudent to divide; nor is the seton here liable to the same objections, as when passed in membranous parts: I apprehend this abscess indeed is not very common, because I do not remember to have met with it: but Mr. Bromfield* says, “it puts on the
“ appearance of two tumors, from the
“ pressure of the muscle; the one ante-
“ rior between the trachæa and implanta-
“ tion of the tendons of the mastoid mus-
“ cles into the upper part of the sternon;
“ the other posterior, a few inches below
“ the mastoid process of the temporal
“ bone.” But the common practice of passing a seton-needle through abscesses, by means of a *cannula*, seems to be a better method than he pursued.

Nevertheless, wherever these abscesses

* Vol. i. p. 102.

can be safely laid open, I would, of all others, prefer the cure by the first intention, if it can be made to succeed; as the most natural, speedy, and easy method of affording proper assistance to the patient. But I cannot, in this instance, confidently recommend such practice, because I have not at present experienced it. Nor have I (knowing the danger and uncertainty of proceeding upon theory) ventured to treat of any disease, of which I have not had practical knowledge.

A D D E N D A.

ON THE FISTULA LACHRYMALIS.

IN treating of the *fistula lachrymalis*, we joined in the opinion of those who think the bone is seldom carious, though we have mentioned an instance, where the disease began in the bone; and we have since had a case, where the *os unguis* was

was found rotten upon opening the abscess. An aperture was readily made through it with a pointed probe, and a piece of lead being introduced, in the manner directed, the boy got well in time, without any trouble; which shews how little is necessary, or ought to be done in such cases,

On the radical Cure of an incysted Dropsy of the Abdomen.

WE have given an instance, page 195, where a cyst being taken away, cured an ascites: and seeing medicines do not avail in incysted dropsies of the abdomen, is it not worth our while to consider whether, when they are unconnected with the adjacent parts, after taking away the water, the patient might not sometimes be cured, by enlarging the puncture, pressing the cyst forward, and drawing it out?

I am aware of the difficulty that must
arise,

arise, from the uncertainty of ascertaining the complaint, requiring this treatment; or in other words, from our not being able to determine with precision, when it ought to take place, and when not: some judgment however may be formed, from the disease not taking its rise in the *ovaria*, from the *viscera* appearing to be sound in the beginning, from its not succeeding a dropical diathesis, from medicines having no sort of effect; and from the malady frequently returning, without any dropical symptom, beside a swelling of the abdomen, or such a kind of swelling of the legs, or *pubis*, as sometimes happen to pregnant women.

Perhaps, observation may furnish us with other *criteria*, to judge whether a palliative only, or a radical cure should be attempted: and this point being settled, I think we might contrive to proceed without much hazard. At present

present, I offer these hints to those who think the subject deserving attention ; and time will probably determine the question.

An omission in the Text, page 496.

AFTER the word appetite, (*penultima*) read—but without evidence of this combination producing any other effect than what happens from the water alone ; unless in some instances where the water is too cold, like brandy, it makes it sit easier upon the stomach.

On Amputation.

IN our account of Amputation by the circular flap, and triple incision, page 537 and seq. it is observed, that either method is preferable to that in common use ; and we shall now add, that the former is a great improvement of the flap operation. But it was not sufficiently explained, that a different method

of

of cure ensued, in consequence of these different modes of operating; and that one of them is more calculated to promote a cure by the first intention, than the other: a circumstance with which many of the faculty I am convinced are not acquainted.

In the circular flap, the second intention * commonly takes place; and though this process may be different under different management, and the cure in general much sooner accomplished, than when we have a large open ulcer to deal with; yet the wounded muscles being puckered together, suppuration more or less ensues: I have heard of considerable quantities of matter being obliged to be pressed out from the cavity at each dressing, and of death not very unfrequently being the consequence of absorption. Whereas in the triple incision, there is

* By the second intention I mean a gradual union of the parts, after digestion.

no cavity but a very small one where the bone comes out; no considerable quantity of matter can either form or lodge; and there being but little more than the skin and muscular flesh to unite with each other, their immediate union will seldom meet with much impediment. For in most cases the skin will lie upon the wound in the manner it is left; as happened in the case we have above transcribed from Mr. Alanfon. The question then is, when we mean to cure by the first intention, whether cutting out part of the muscles, or the triple incision, is most eligible for the purpose; and also whether the latter will not succeed alike, in every instance where it can be used?

Celsus, who meant to cure by the first intention, did not cut out any part of the muscles, *but under them*; and drawing them back, sawed off the bone as near as he could to the flesh adhering to it. He then smoothened the bone which
her

had been made rough by the saw, and having preserved the skin in a lax state, he laid it without any intermediate dressings, against a level surface as far as it would go; and thus his operation, and after-treatment, perfectly corresponded, or rather, are both included in one: whereas when we cut out part of the muscles, and lay the tegiments down, we seem to be pursuing different intentions at the same time*.

The double incision, since invented, is an improvement of this operation, which from what I have seen, will stand the test of inquiry. The hemorrhage in his time was stopped, in wounds †, by dry lint, or lint moistened with vinegar, a sponge squeezed out of cold water, and pressure. If these were insufficient, he took hold of the vessel, and applied a

* This will be fully explained when we treat upon the cure of wounds by the first intention.

† Lib. v. cap. 26.

ligature;

ligature; but when circumstances did not allow of this method, he cauterized with an hot iron; and though he gives no directions about stopping the bleeding in amputation, there is no doubt of these being the methods he used.

Galen also speaks of suppressing hemorrhages from wounds of the veins and arteries by the ligature*; but the Greeks afterwards in their amputations, chose the cautery for this purpose, and cured the wound by digestion, &c. † Hence losing sight of the Celsian method, we ran into many errors, which have been injurious to those who have unfortunately been under the necessity of losing their limbs.

* *Method. Med.* lib. v. † *Paulus*, lib. vi. cap. 84.

END OF THE SECOND VOLUME.

